

PAINT and VARNISH

THE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHES



The Industry is
talking about our **NEW**
ADVASOL LEAD DRIER

The Lead Tallate that approaches Lead Naphthenate in Quality

For years, we have been offering our ADVASOL (Tallate) Driers as substitutes for our naphthenates where economy was the main consideration. Advance Advasol Cobalt 6% and Manganese 6% have become standard in the industry — but Lead Tallate presented special problems to all manufacturers because of instability at low temperatures.

Now, our process development department has created a new and improved lead tallate which we believe is superior to any lead tallate on the market. With a **LIGHT COLOR** equal to the finest grades of lead naphthenate and a **LOW VISCOSITY** also equal to lead naphthenate, ADVASOL Lead has indeed become an extremely attractive drier.

Perhaps the major improvement, however, is the excellent **COLD STABILITY** offered by this new product. There is no precipitation with a minimum change in viscosity at temperatures as low as 0°F. ADVASOL Lead is flowable at 0°F., so that outside storage during the winter months offers no problems.

New and improved ADVASOL Lead is just another of our developments designed to give you the best in driers. Write for samples and recommendations.

ADVANCE
SOLVENTS & CHEMICAL CORP.
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Give your alkyd enamels
more quality at less cost
 with RCI's
BECKAMINES
3530 and 3535

● Now you can make a better alkyd enamel and cut your production costs at the same time . . . thanks to Reichhold's two new solvent soluble urea-formaldehyde resins.

Suppose your business is appliance coatings, cabinet and auto enamels, or furniture finishes. You can harden your alkyd vehicles with BECKAMINE 3530. It's comparatively inexpensive, yet produces harder films than costlier resins. And it contributes such advantages as faster cure, improved color and stability, reduced hazing.

If you're a manufacturer of auto refinishing enamels or coatings for signs, machinery, railroad equipment, drums or gas pumps, you may profit by looking into BECKAMINE 3535. With this resin, hardness and gloss are tops, while your formulating cost goes down. Its high mineral spirits tolerance permits you to use low-cost aliphatic solvents.

Get complete data on BECKAMINES 3530 and 3535 by writing for Technical Bulletins SC-3 and SC-4.



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1. **High purity . . . at no extra cost.**
You add the latent solvents you prefer.
2. **Unsurpassed ease** of formulation—for both nitrocellulose and vinyl types.
3. **Gives solutions** of exceptionally high solids content—or high diluent content, both aromatic and aliphatic.
4. **Imparts excellent flow,** blush resistance, high gloss.
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COMPLETE STORY!**

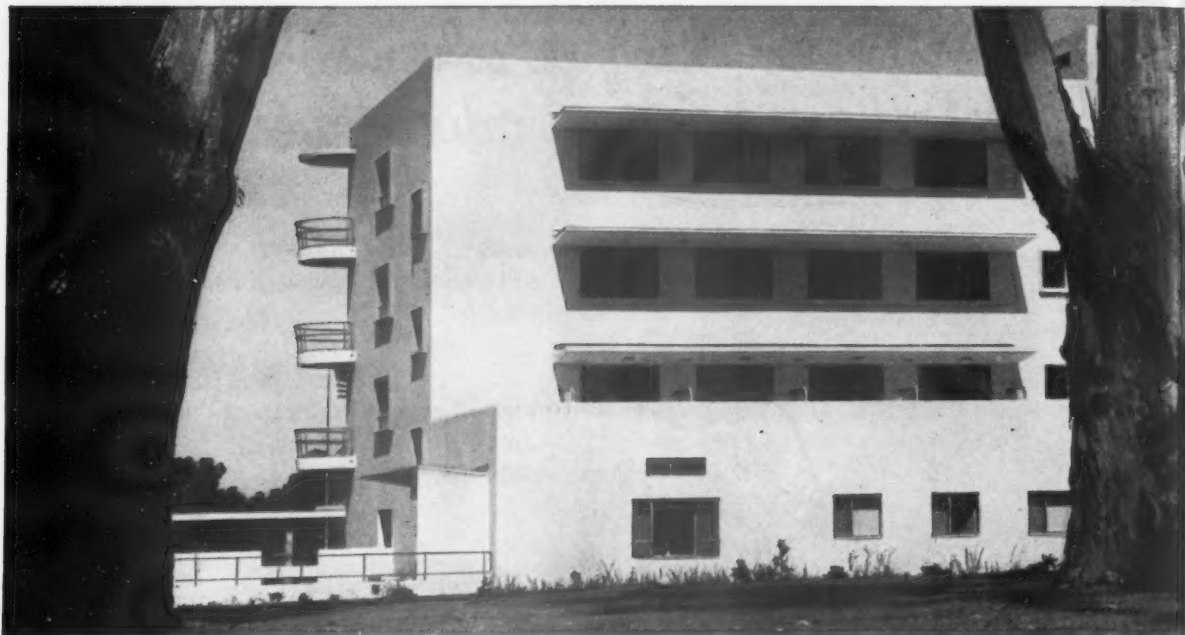
These five important advantages are yours when you use Shell Ketones. Lacquer solvent systems based on Ketones have so many inherent advantages they have become standard with the nation's foremost formulators of both nitrocellulose and vinyl lacquers.

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Peninsula Hospital, San Mateo, painted with exterior latex paint. Stone and Mulloy, Architects—Marraccini and Patterson, Partner Architects. Russell Hinton Company, Painting Contractor.

LET'S TAKE A COMPLETE LOOK AT EXTERIOR LATEX PAINTS!

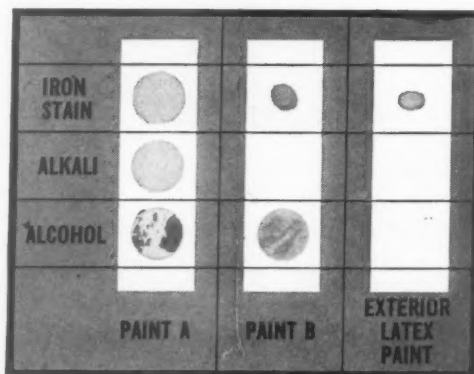
They're highly resistant to alkali, staining and alcohol, have excellent package stability, won't yellow or retain dirt. And we can back our statements by actual tests.

We've read a lot of claims about various exterior masonry paints, lately. You probably have, too. But, what we have to say about a good exterior masonry latex paint, we can prove.

Laboratory and field tests show that Dow Latex 512-K (styrene-butadiene) makes durable masonry paints that won't mildew, yellow with time or retain dirt. When they do fail, as *all* paints do, they chalk gradually and repainting is easy. Paints that blister and peel with age make repainting difficult. You, yourself, can prove their superior resistance to alkali, alcohol and water by performing the simple test shown on the right.

We have yet to hear of an exterior latex paint made with Dow Latex that wasn't stable in packaged form. We haven't had any problems of settling, rusting, color loss and spoiling. As for quick drying, lack of painty odor, ease of application, fast equipment clean-up, exterior latex paints are unbeatable.

When you buy or make an exterior paint, look at all the facts. You'll agree with progressive manufacturers and users—latex paint is *best*, by actual test. For further information on exterior latex paints, write for the booklet "Dow Latex 512-K for Exterior Latex Paints." THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department PL 479E.



PAINT THREE DIFFERENT PANELS with an exterior latex paint and two other typical exterior paints. Put a few drops of alcohol, iron oxide in water and 5% sodium hydroxide (an alkali) on each. In twenty minutes, try scraping the paints where these reagents have been on them. See how much better the latex paint has stood up.

you can depend on DOW PLASTICS



PAINT and VARNISH *Production*

(REG. U.S. PATENT OFFICE)

Formerly PAINT and VARNISH PRODUCTION MANAGER
(Established in 1910 as The Paint and Varnish Record)

NEXT ISSUE

"Petroleum Thinners for the Paint Industry" is the title of an article scheduled for our March number. The article will discuss the general classes of petroleum thinners available and the processes from which they are derived. Properties of importance to the paint formulator are reviewed in this article and this will include test methods to determine some of the more important characteristics. Interpretation and significance of such test data will also be presented.

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PANAREZ 7-210	18+	200-220	150	0-1
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PANAREZ 9-210	15	200-220	160	0-1
PANAREZ 12-210	16	200-220	60	0-1

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Editorial Comment

February, 1955

Announcing A New Department

IT HAS been estimated that American industry is planning to spend in 1955 as much for new plants and equipment as it did in 1954. However, outlays in some industries for new plants will fall short of last year's level. This is especially true of the chemical industry where attention will be focused on modernizing rather than new plant facilities.

It has been estimated, according to a survey recently released by the Bureau of Census that the paint and allied industries spends some 20 million dollars annually for new machinery and equipment. Such a trend indicates that paint manufacturers are constantly seeking ways and means to reduce operating costs in wake of the rising tide of competition.

Government's attitude in liberalizing tax allowances for depreciation undoubtedly has had a stimulating effect on increasing plant and equipment investments. This tax liberalization has been especially beneficial to smaller firms, who during the past year have increased their purchase of new machinery and equipment. Such a development has been a most important factor in strengthening our national economy.

In this connection, we bring to your attention the incorporation of a new department entitled, "Production Tips," on page 41 of this issue. This department will present factual information designed to reduce production and maintenance costs, improve methods, processes and quality.

To those of you who have any gadgets or "gimmicks" which you feel may be of interest to the men connected with the various phases of paint production, we shall be pleased to present this information, properly credited, in "Production Tips."

Your comments and suggestions regarding this new column are most cordially welcomed.

Something Extra in 1954 Review

HOW often have you run into the problem of trying to obtain more specific information on a particular raw material which you can identify only by its trade-name?

You would like to know what it is and who supplies it, and you need this information as quickly as possible.

You can eliminate the bother of digging through files and literature, and telephoning for such information by getting a copy of the 1954 Review of the Paint Industry, scheduled for publication the later part of this month.

This Review, (of which the current issue is the third annual volume) in addition to its comprehensive digest of the technical developments of the paint industry, will be expanded to include an up-to-date listing of trade-names of all raw materials, equipment and containers used in the coatings industry.

Another added feature of this year's Review will be the inclusion of a government specification section which will be most helpful to those firms supplying paint products to various government agencies.

As in last year's Review technological developments in raw materials, production, application and finishing methods, and tests will also be presented in detail.

The complete trade-name directory and company index will, in essence, make this year's Review a buyers' guide designed to help you identify the materials and equipment you need from time to time.

The 1954 Review of the Paint Industry certainly deserves an important place on your bookshelf thus making available at your finger tips all salient and relevant technical data on the coatings industry.

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ethyl acetate

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isopropyl acetate

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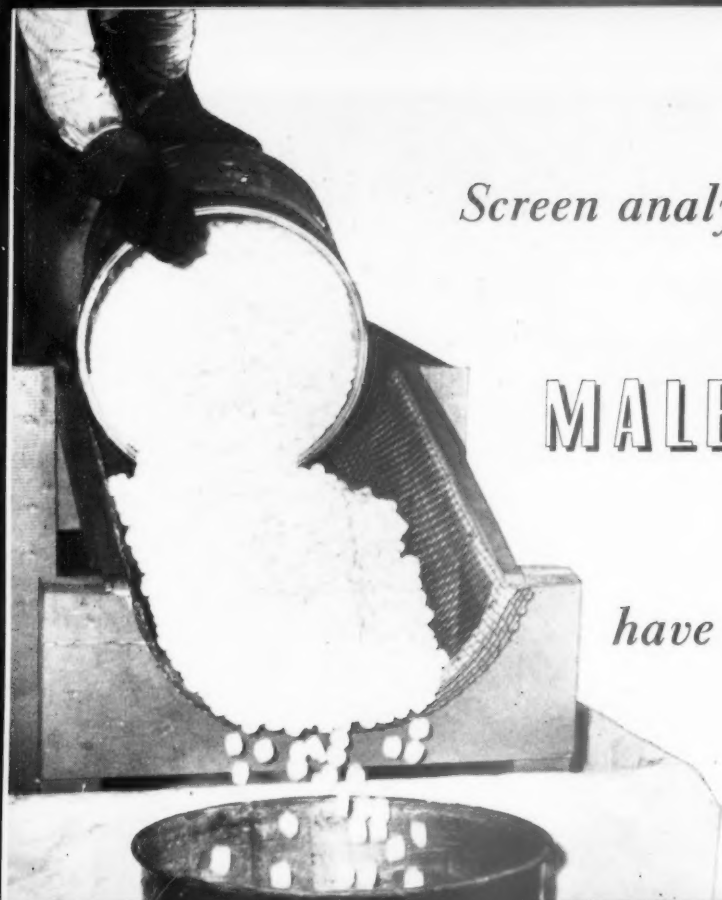
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*have up to 75-90% fewer fines
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Common sense says that lower surface area to weight and a smooth "cornerless contour" *should* mean less degradation in transit and in handling. Careful screen analysis after a 1,000 mile truck haul proves beyond question that National Maleic Anhydride Tablets *do* have up to 75-90% fewer fines "as delivered".

But —

"Less fines" is only one good reason to specify National Maleic Anhydride Tablets. Quick dissolving, uniformity and high quality are equally important to your Process Control.

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Look no further for drum to drum uniformity . . . complete stability . . . sure drying action . . . trouble-free solvents . . . precise metal purity!

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Pioneered by Stresen-Reuter, these tallate driers are closely controlled . . . exceptional stability for this type of drier . . . the right driers where cost is a prime factor.

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CELANESE^{*} PVA^c

**from Celanese-produced monomer . . .
homopolymer and copolymer resin emulsions for
latex type water based paints and primers**

The Celanese PVA series of Polyvinyl acetate emulsions—both the homopolymer and copolymer types—is available for immediate shipment. Developed by the Plastics Division of Celanese, these emulsions are processed from Celanese—petro-basically produced monomer, and engineered to meet the rigid requirements of the paint industry.

With the growing popularity of latex-type paints in the do-it-yourself market, and the increased use of vinyl products, this new

Celanese source gives manufacturers the dependable, continuous supply and price stability they are looking for.

The Celanese technical service department is set up to give detailed assistance in the development of paints with polyvinyl acetate emulsions. Use the coupon below to receive the New Product Bulletin on PVAc emulsions for paints or write to

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Plastics Division, Box 165-B
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PLASTICS and RESINS

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"Don't worry—

It's Thixotropic!"

The paint that didn't spill for the young lady represents a remarkable new development in the nation's paint industry. It's manufactured from "Burnok," a new thixotropic alkyd developed by the T. F. Washburn Company, Chicago, Ill.

Paints made of Burnok alkyds solve many age-old painting problems. Because they have a thick, jelly-like consistency, they won't settle, never have to be stirred, and won't sag, curtain, or bead. They are ready for use as soon as opened. But despite this thick consistency, paints containing Burnok vehicles brush on as easily as ordinary paints.

Today, this revolutionary vehicle is being used in all types of oil base paints—flats, semi-gloss and high gloss enamels. The development of Burnok by the T. F. Washburn Company is recognized as one of the most significant contributions to the paint industry in recent years.

In the production of Burnok vehicles, Washburn regularly employs Pittsburgh Phthalic Anhydride because of its uniform high quality.

As a basic producer of Phthalic Anhydride, Pittsburgh can assure you consistent quality, dependable supplies and fast deliveries. Call or write for full information today.



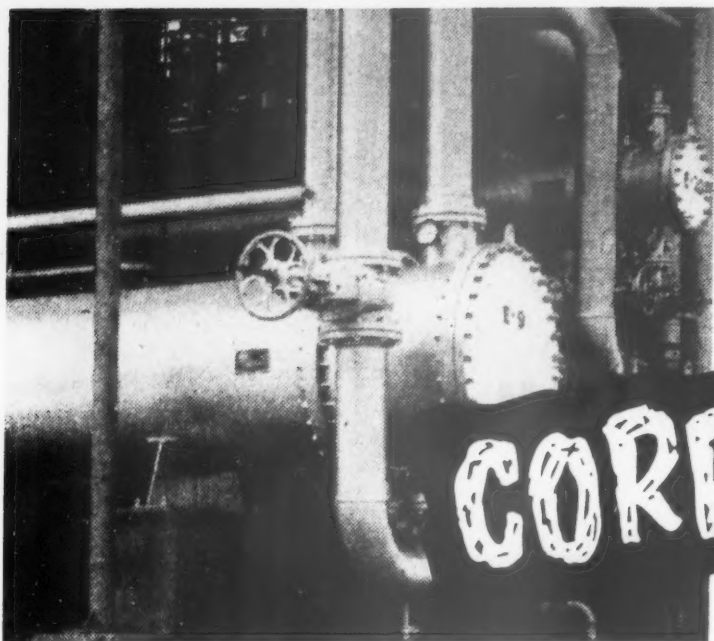
In the production of Burnok alkyd vehicles by a controlled reaction in stainless steel kettles, high purity Pittsburgh Phthalic Anhydride is one of the key materials.



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Effects of—

New Availability of Phthalic Isomers
Improvements in Refining Natural Fatty Acids
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Here's Help in Choosing or Making Alkyds

Here is a sound, *practical* guide to resin selection and production. It tells how to choose the one alkyd resin that best meets the specific needs of each coating requirement. The partial list of contents above will give you

some idea of how thoroughly this booklet covers the subject.

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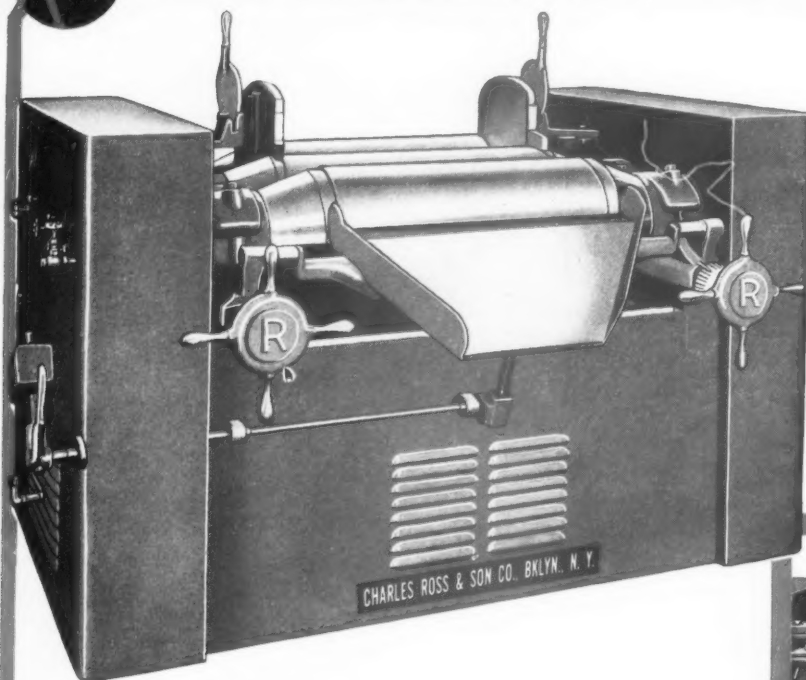
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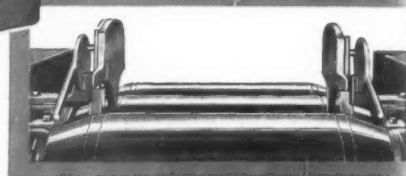
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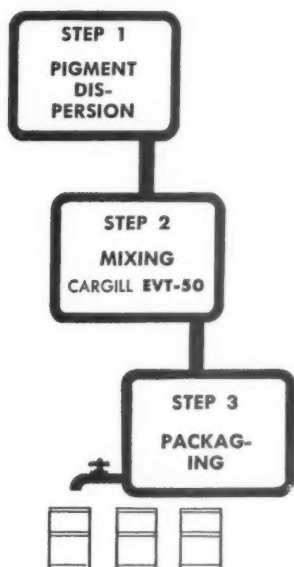
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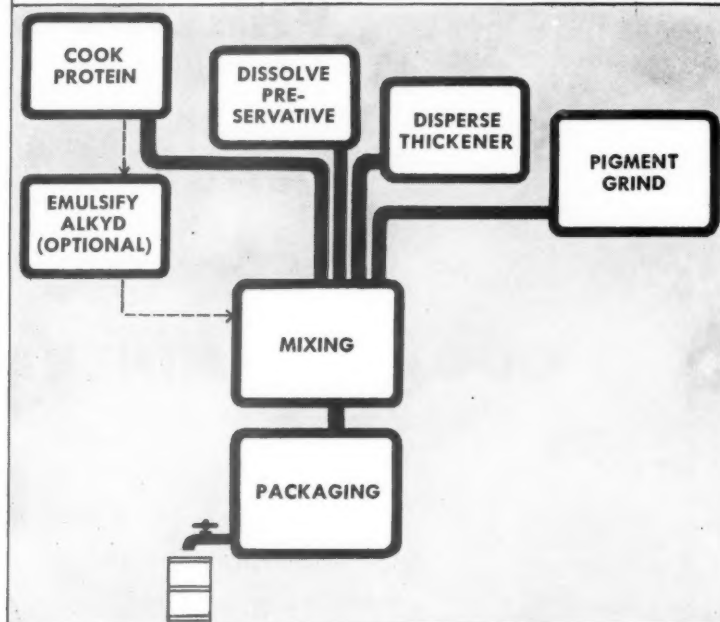
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NEW EVT-50 METHOD



OLD METHOD



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*Now you can make latex-base paint in just 3 easy steps
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Cargill EVT-50 is a total emulsion vehicle of the modified latex type that enables you to make paint in just three easy steps. All you do is (1) disperse pigments (2) mix (3) package.

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Cargill EVT-50 was developed to meet your demands for a stable, complete vehicle of the synthetic latex type. It's a combination of synthetic and oleo-resinous polymers, balanced to give you the best properties of both. Tests by Cargill chemists have shown that paint made with EVT-50 has amazing durability, adhering well to all interior surfaces.

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When you make paint with Cargill EVT-50, you use standard plant equipment. No involved and complicated formulations are necessary. And you can reduce your inventory of raw materials, too.

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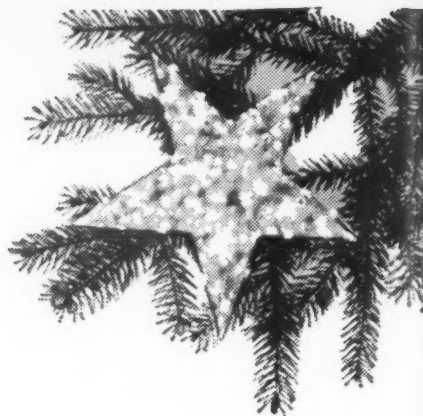
the boy and the Star

He is old enough now to know that the ornament on the tree is more than simply a star . . . to understand the deeper meaning of Christmastime.

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White Lead

"45X"

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Today, "Dutch Boy" Basic Silicate White Lead "45X" is the reigning favorite — because it's "lead" in its most economical form.

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DECORATIVE AND PROTECTIVE COATINGS OF "HYPALON"

By
Malcolm A. Smook
Kenneth C. Smith*

"HYPALON"*** chlorosulfonated polyethylene is a relatively new elastomer made by treating polyethylene with chlorine and sulfur dioxide. The finished product is supplied as a white, matted solid containing approximately 27 per cent chlorine and 1.5 per cent sulfur, and has a specific gravity of 1.1.

Introduced only two years ago by Du Pont, "Hypalon" is already finding a wide variety of applications where ordinary types of natural and synthetic rubber have proved wanting. One of the more important uses for this unique material is in the formulation of flexible, decorative and protective coatings in bright, light-stable colors for fabric, metal, rubber, masonry, and other surfaces.

Suitably compounded and cured coatings of "Hypalon" have these advantages:

1. Complete resistance to ozone.
2. Outstanding resistance to sunlight and weather.
3. Excellent resistance to chemicals, especially oxidizing agents.
4. Will not support combustion.
5. Unusually good resistance to scuffing and abrasion.



M. A. Smook



K. C. Smith

6. Excellent color stability and good physical properties in a wide range of colors.
7. Low-temperature flexibility.
8. Excellent heat resistance at temperatures in the range of 250° to 300° F.
9. Good adhesion to rubber, fabrics, metal, wood, and masonry.
10. A high degree of flexibility and excellent flex-life.

This remarkable combination of properties suggests a number of applications for coatings of "Hypalon" chlorosulfonated polyethylene, including protection against ozone attack for such rubber products as sponge, hose, weatherstripping, footwear, toys, and tires; chemical- and weather-resistant protection for industrial and marine equipment; and for waterproofing canvas and other fabrics made from natural and synthetic fibers. The coatings may be applied by brushing, spraying, dipping, or spreading.

Compounding

The commercial form of "Hypalon" is a white thermoplastic crumb, compressed into a relatively solid mat one inch in thickness. As manufactured this elastomer is uncompounded, and is readily soluble in aromatic and chlorinated hydrocarbons.

To develop the best properties of "Hypalon," it is desirable to compound the material with curing ingredients and vulcanize it at elevated temperatures. The preferred compounding ingredients include a metal oxide such as litharge or magnesia, an organic acid, and an organic accelerator. A lead salt such as tri-basic lead maleate may be used instead of litharge. Of a number of organic acids which have been tried in the compounding of "Hypalon," rosin acids have proved most effective. Hydrogenated rosins as "Staybelite" are preferred in light-colored compositions.

Organic rubber accelerators are also effective in compounds of "Hypalon." Mercapto benzothiazole disulfide (MBTS) and tetramethylthiuram disulfide (Thiuram M) are the preferred accelerators. In addition to these curing ingredients, various fillers, softeners and resins may also be used to modify the properties of these compounds.

Solutions of "Hypalon" chlorosulfonated polyethylene may be compounded by adding the necessary ingredients as adispersion in

*Malcolm A. Smook and Kenneth C. Smith are connected with the Rubber Chemicals Div., E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.

**Reg. U. S. Pat. Off.

solvent. Solid compounds of this elastomer may be mixed on two-roll mixing mills or in internal mixers in the same manner that other rubber compounds are mixed.

Solvent Solutions

The preferred method of preparing solvent solutions or cements is to make a base lacquer by churning "Hypalon" in solvent and then adding, to the churn, the compounding ingredients that have been dispersed in solvent by ball milling or by grinding on a paint mill.

Good solvents for "Hypalon" are toluene and xylene. Naphtha, mineral spirits and methyl ethyl ketone are not solvents for "Hypalon," but can be used in combination with aromatic solvents to make useful cements. Mineral spirits containing high proportions of aromatics and chlorinated hydrocarbons, are also solvents for "Hypalon."

The following typical, all-purpose cement may be used for spraying, dipping, or brushing:

Base Cement	Parts by Weight
"Hypalon"	100.0
Xylene	400.0

Dispersion of Compounding Ingredients

	Parts by Weight
Tri-basic Lead Maleate	40.0
Hydrogenated Wood Rosin	5.0
MBTS	2.0
Thiuram M	0.5
Phthalic Acid	2.0
Lead Acetate	2.0
Precipitated Whiting	50.0
Butanol	100.0
Mineral Spirits	75.0

The base cement is made by churning the "Hypalon" chlorosulfonated polyethylene in the xylene until a clear, smooth cement is obtained. The dispersion of compounding ingredients in the mixture of butanol and mineral spirits is made by ball milling, or by grinding on a paint mill. For spray application the above formulation should be diluted with xylene and mineral spirits to approximately 20 per cent solids.

Solvent Dispersions

A heavy dough having high solids content, which is suitable for application with a doctor knife as a coating on fabric, can be pre-

pared from the following composition of "Hypalon:"

Base Dispersion	Parts by Weight
"Hypalon"	100.0
Methyl Ethyl Ketone	60.0
VM & P Naphtha	110.0
Diocetyl Phthalate	15.0

Dispersion of Compounding Ingredients

	Parts by Weight
Tri-basic Lead Maleate	40.0
MBTS	2.0
Thiuram M	0.5
Hydrogenated Wood Rosin	5.0
Precipitated Whiting	50.0
Phthalic Acid	2.0
VM & P Naphtha	160.0

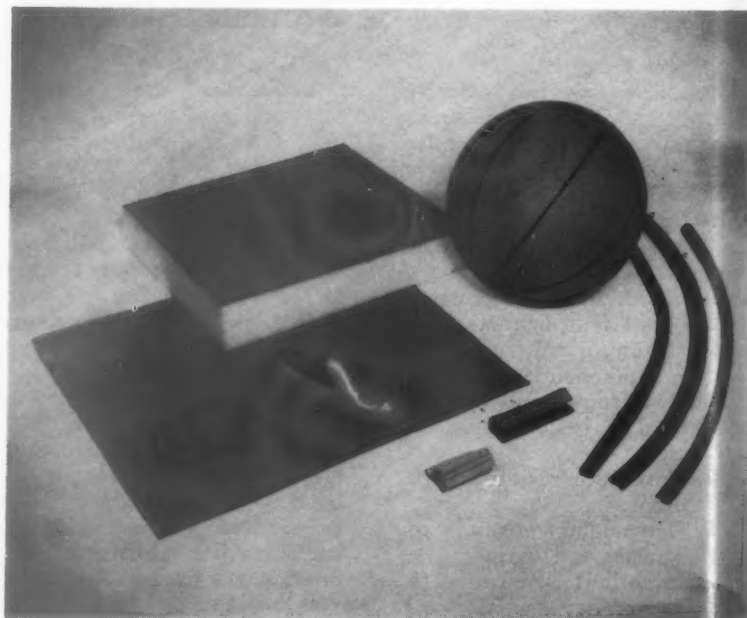
To prepare this dispersion, the "Hypalon" chlorosulfonated polyethylene is added to the mixture of methyl ethyl ketone, VM & P Naphtha, and diocetyl phthalate in a churn equipped with a high speed agitator. The liquids will not dissolve the "Hypalon," but will swell and soften it, and with thorough, rapid agitation a smooth dispersion will be formed. The remaining compounding ingredients may be dispersed in naphtha by ball milling or grinding on a paint mill. This dispersion is then added to the dispersion of "Hypalon" with thorough agitation.

Can Stability

The can shelf life of a properly compounded cement of "Hypalon" is from six to 12 months. This is obtained through the use of a gel retarding system consisting of a mixture of an anhydrous alcohol, such as butanol, and an acid, such as phthalic or citric. It is important that no moisture be introduced into the cements in the solvents or other compounding ingredients, since water accelerates cure and reduces shelf life. Solvents are a frequent source of water contamination and care should be taken to make certain that those used in the preparation of solutions or dispersions of "Hypalon" are dry.

If for any reason the presence of gel retarders should be undesirable, good can stability may be obtained by omitting the combination of lead acetate, MBTS, and Thiuram M from the cement, in which case it is added in the form of a solvent dispersion at the time of use.

Spreading doughs made by dispersing "Hypalon" chlorosulfonated polyethylene in non-solvents such as methyl ethyl ketone and



Products using "Hypalon" coatings. In left foreground, piece of corrugated rubber standing mat coated for color retention, abrasion resistance, and slow ageing; on top of the standing mat sample is a coil of electrical wire, coated for resistance to ozone cracking, oxidizing agents, and color coding in wire installations; next to wire is rubber overshoe coated in bright blue; center foreground, rubber extrusions coated with colored "Hypalon" for use as windshield frame and trunk weather-stripping on automobiles (in colors that match car color scheme); at right foreground, pieces of automotive door weather-stripping coated with "Hypalon;" left rear, slab of urethane rubber foam coated with same material; right rear, basketball with clear lacquer of "Hypalon" for abrasion resistance, longer life, and resistance to sunlight out of doors.

naphtha will be stable for approximately one month at room temperature.

Modifications of the Formulation

The preferred curing agent for coating compositions of "Hypalon" is tribasic lead maleate. Litharge and magnesia are also satisfactory curing agents, but cements containing them have shorter shelf life. Litharge is recommended only for dark-colored coatings, and magnesia is not recommended for use where water resistance is an important factor.

Other accelerators may be used to obtain a faster rate of cure. The substitution of MBT for MBTS will increase the rate of cure, but it imparts a yellow color to uncured compositions which can be removed only by curing at elevated temperatures. Very rapid cures can be obtained by substituting NA-22 (1 part) and DPG (2 parts per 100 parts of "Hypalon") for the MBT or MBTS. Such acceleration will give fairly tight cures at room temperature within one week. Either of these latter accelerators reduces the can life of the cement to about one month.

Up to 50 parts of coumarone-

indene resin may be used as a low cost extender for coating compositions of "Hypalon" which will not be exposed to outdoor weathering. The addition of this resin will have no other effect than to reduce the elongation of the film of "Hypalon" and to darken white or light colors. Coumarone-indene resin is easily dissolved in the solvent along with the "Hypalon" in the preparation of the base cement. Epoxy resins may also be used as extenders. Their addition, in amounts of 15 to 35 parts per 100 parts of "Hypalon" chlorosulfonated polyethylene, does not adversely affect the color of coatings of "Hypalon." Films modified in this manner have a harder, drier surface than unmodified coatings of "Hypalon."

Colors

In white or light-colored coatings of "Hypalon" it is desirable to include pigments which are effective screens for ultraviolet light in order to obtain the best aging characteristics during outdoor exposure. For white compositions a minimum of 15 parts of titanium dioxide per 100 parts of "Hypalon" should be used. In colored stocks certain pigments are more effective screens

for ultraviolet light than others. For blues and greens three to four parts of Du Pont "Monastral" Blue BT-284D or Du Pont "Monastral" Green GT-674D are recommended. For a bright red color, six parts of Du Pont Toluidine Red RT-386D per 100 parts of "Hypalon" are recommended. Red iron oxide is also a satisfactory pigment; at least 10 parts are recommended.

Coatings for Rubber

Durable, flexible coatings of "Hypalon" can be made in a wide range of attractive, weather-stable colors and applied to virtually all elastomeric compositions. These coatings normally have a satin finish. They are pleasing to the eye and touch, and they protect the underlying elastomer from attack by atmospheric ozone and other devastating weather elements.

Attractive, decorative coatings of "Hypalon" may be used over rubber stocks which contain staining chemicals and softeners. This can be accomplished by incorporating from 25 to 50 parts by weight of 325-mesh aluminum powder in the compositions. The aluminum powder is combined with the dispersion of compounding ingredients shown in the recipe. The larger amounts are required for gray or aluminum color; lesser amounts are used in combination with the pigment colors. When aluminum powder is included in the formulation, the elongation of the films obtained is frequently less than 100 per cent. It is therefore not advisable to apply these coatings over tires, gloves, or other articles subject to marked distortion.

A coating of this type was applied to an automotive floor mat and exposed to an S-1 lamp (ASTM D925-51T) for eight hours. Practically no discoloration was observed during this period of exposure and only slight discoloration appeared after 24 hours.

Adhesion of coatings of "Hypalon" chlorosulfonated polyethylene to vulcanized rubber surfaces can best be obtained by roughening the surface of the rubber and wiping it with a solvent such as toluene before applying the "Hypalon." If multiple coats are applied a drying period of 30 minutes at room temperature or about five

"Hypalon" chemical rubber has proved successful as a coating material for a wide variety of fabrics. The new Speed Graphic has a bellows made of "Armalon" made by the DuPont Company's Fabrics and Finishes Div., which is nylon coated with "Hypalon" (fabric under camera in photo is also "Armalon"). The combination of these two man-made materials—nylon for basic toughness and "Hypalon" for sealing, long flex life and resistance to aging assures good performance over many years under all kinds of conditions. At right in the same photo is a piece of tarpaulin material—again nylon, coated on both sides with "Hypalon". In addition to long life and the ability to withstand all kinds of abuse, the tarp material weighs only about a third as No. 8 cotton duck.



minutes at 125° to 160° F. should be allowed. When the final coat has been applied the "Hypalon" coated article should be dried for 20 to 30 minutes at 125° to 160° F.

Maximum adhesion of a coating of "Hypalon" to a rubber surface is obtained by applying the coating to the rubber before it is vulcanized. However, this method is applicable with only a few types of rubber products such as extruded items and coated fabric, where the rubber surface is not deformed during cure.

Coatings of "Hypalon," like those of other thermosetting materials, develop their maximum resistance to abrasion and scuffing and to attack by chemicals and solvents after a heat treatment.

Baking or curing the coatings at temperatures in the range of 275° to 300° F. is sufficient to develop their optimum properties. Lower temperatures may be used, but a longer time will be required. Coatings which will cure at room temperatures within a period of several days can be prepared by incorporating certain accelerators into the composition of "Hypalon" chlorosulfonated polyethylene.

Residual solvent in coatings of "Hypalon" will cause blistering during cure at the higher temperatures. If this occurs it may be eliminated by lengthening the drying time after application of the coating and prior to cure.

	1	2	3	4
	parts by weight			
"Hypalon"	100.0	100.0	100.0	100.0
Xylene	400.0	400.0	600.0	400.0
Methyl Ethyl Ketone	—	—	200.0	—
"Epon" 828	5.0	5.0	—	5.0
"Uvinul" 400	0.5	—	—	—
Stearic Acid	1.0	1.0	—	—
"Epon" 1001	—	—	100.0	—
"Durez" 12603	—	—	—	100.0
Butanol	50.0	—	—	—

Table I. Formulation of clear "Hypalon" lacquers.

Clear Lacquers

Unpigmented lacquers of "Hypalon" impart a flexible, clear glossy finish to rubber products such as sporting goods and footwear. They protect against ozone attack and provide a dry, lustrous surface that is pleasing to the eye and to the touch.

The formulations given in Table I are suggested for clear lacquers of "Hypalon." These coating compositions can be prepared by mixing all the ingredients together in a churn, but "Uvinul" 400 should first be dissolved in butanol for best incorporation.

Practical lacquers from "Hypalon" chlorosulfonated polyethylene require the use of a light stabilizer and detackifier or lubricant. Clear uncured films of "Hypalon" can be stabilized against ultraviolet light degradation by the use of acid acceptor type stabilizers, such as "Epon" 828. Other stabilizers

which absorb ultraviolet light of the critical wave length, such as "Uvinul" 400, are also effective in lacquers of "Hypalon." For best results in protecting thin, unpigmented films from deterioration during outdoor exposure, a combination of these two stabilizers is recommended.

Any slight tackiness of clear films can be eliminated by spraying with a solution of silicone oil, or by incorporating one per cent, based on the "Hypalon," of "Heliozone" or stearic acid into the lacquer. The addition of various resins to the solution of "Hypalon" also reduces the tack of clear films. Terpene-phenolic resins, urea-formaldehyde resins, or epoxy resins are suggested. The epoxy resins probably function also as light stabilizers, since they have residual epoxy groups. All of these resins also harden the film and lower the elongation. When resin extenders



"Hypalon" chlorosulfonated polyethylene displays remarkable resistance to a host of paint- and rubber-deteriorating chemicals and for this reason makes an excellent protective coating for chemical and industrial plants. Because coatings based on this material retain their original brilliance and hue, they are used for color-coding piping systems, marking safety areas, or generally brightening up plant and equipment while providing a high degree of protection against corrosion. Flows on like enamel.

are used, blushing of the films occurs if they are stretched, indicating partial incompatibility. Nevertheless, resin additives provide an attractive means of extending clear coatings of "Hypalon."

For spray application, the coatings may be diluted with mineral spirits or naphtha to about 15 per cent solids. These coatings will dry tack-free and do not require curing.

The best adhesion is obtained between clear lacquers of "Hypalon" chlorosulfonated polyethylene and rubber products when the lacquer is applied over the uncured elastomer, although adequate adhesion for many applications is obtained by application to vulcanized natural or synthetic rubbers. The adhesion of the lacquers to polyvinyl chloride, other resins, and metals is also satisfactory for many services. The resin-extended coatings have the best adhesion and are recommended when extreme flexibility is not required.

Chemical-Resistant

Coatings for Metal

The following formulation is suggested for a light colored protective coating of "Hypalon" for metal surfaces which are exposed to corrosive chemicals:

	Parts by Weight
Base Cement	
"Hypalon"	100.0
Modified Phenolic Resin	100.0
Xylene	400.0

Dispersion of Compounding Ingredients

Tri-basic Lead Maleate	40.0
Hydrogenated Wood Rosin	5.0
MBTS	2.0
Thiuram M	0.5
Lead Acetate	2.0
Phthalic Acid	2.0
Blanc Fixe	50.0
Pigment Color	as required
Butanol	100.0
Mineral Spirits	50.0

The cement may be prepared by dissolving the "Hypalon" chlorosulfonated polyethylene and phenolic resin in xylene. The other compounding ingredients are dispersed in the mixture of butanol and mineral spirits by ball milling or grinding on a paint mill. The dispersion is added to the base cement with rapid agitation.



Door weatherstrip on several 1955 models in the General Motors line is coated with "Hypalon" chemical rubber for longer life. Ordinary rubber quickly succumbs to the effects of sunlight, ozone, extremes in climate and weather.

Good adhesion of coatings of "Hypalon" to clean metal surfaces is obtained when a terpene-modified phenolic resin, such as "Durez" 12603, is included in the compound. The resin does not decrease the stability of the cement and has only a slight effect on the color of the coatings. The best general properties are obtained when 100 parts by weight of "Durez" 12603 are used with 100 parts of "Hypalon". Increased amounts of the resin increase the hardness and brittleness of the film. Film thicknesses of two to three mils per brush coat can be obtained with the resin-extended paints. These coatings develop adequate adhesion for service after a one-day drying period.

Slightly better chemical resistance can be obtained by omitting the resin in these coatings, but when a phenolic resin is not used, a metal primer is required to obtain satisfactory adhesion. In general, the priming systems suitable for neoprene coatings are very satisfactory for "Hypalon." Most of these are based on chlorinated rubber. With the resin extender omitted, the solids content of the paint is reduced, and maximum single coating thicknesses are limited

to between one and one-and-a-half mils.

Clay, precipitated whiting, and blanc fixe have been used as fillers for metal protective coatings, but their selection depends upon service requirements. Precipitated whiting gives the highest resistance to chalking and provides smooth, glossy surfaces, but improved resistance to water absorption and chemical attack is obtained when either blanc fixe or hard clay is used as the filler.

The heat resistance of coatings of "Hypalon" chlorosulfonated polyethylene is improved by the addition of two parts of "Age-Rite" Resin D to the recipe as a component of the compounding ingredient dispersion. Since this antioxidant will cause discoloration upon exposure to light, it is suitable only for black or dark-colored coatings.

The chemical resistance of protective coatings of "Hypalon" is indicated by observations made after immersion for one month at room temperature. Steel rods, which had been painted with three coats of a chemical-resistant paint of "Hypalon" to provide a film thickness of approximately 0.006

(Turn to page 62)

DRYING OIL TECHNOLOGY

PART II

Refinery Operations

DRYING oils, like most natural products, must be modified or refined to meet the varied demands of the industrial consumer. Crude oils are seldom used. It is true that they may be used in processes where traces of water or mucilaginous matter are unimportant, such as in the preparation of putties or the manufacture of metallic soaps. But even here the so-called crude oil undergoes preliminary treatment—an aging or settling process, during which gross impurities in the oil coagulate or solidify, and a filtering process to remove the impurities. The remaining clear oil is the "raw" oil of commerce.

The oil of widest utility to the paint and varnish industries, is, of course, linseed oil. It constitutes about two thirds of all the oils they use. It is the only one available in all types despite the large number of refined and treated oils marketed by any one producer. For this reason the present chapter deals essentially with linseed oil refinery operations, although the methods cited are quite general and can be applied equally well to all commercial drying, semi-drying, and non-drying oils.

The purpose of this chapter is to

discuss basic refinery operations from an engineering point of view and to describe the various types of treated oils from a use point of view.

Unit Operations

Oil refining consists of five fundamental unit operations. They are break stabilization, bleaching, acid refining, alkali refining, and refrigeration. These five operations are required to produce the following typical series of refined linseed oils. (See Table I).

To produce the treated oils, i.e., boiled oils, varnish oils, grinding oils, blown oils, and polymerized

oils, three additional unit operations are also necessary. They are, boiling, blowing and thermal polymerization.

Oil Refining

Break Stabilization

As described in the previous chapter, raw oil of commerce contains materials capable of forming gelatinous material in excess of 500° F. The quantity is directly related to the ash content of the oil.

Break stabilization is the process that prevents an oil from forming gelatinous precipitates at temperatures in excess of 500° F. Any oil

TYPICAL LINSEED OIL PRODUCTS

Name	Color (Gardner)	Viscos. G-H	Iodine Number	Lbs/Gal. at 77° F.	Acid Number
Raw	10-12	A	173-190	7.72	4 Max.
Aged Raw	8-10	D	155-175	7.86	3-6
Non Staining Raw	8-10	A	173-190	7.72	2- 4
Acid Refined	6-8	A	170-190	7.72	10-15
Low Acid Refined	5-7	A	173-190	7.72	2-3
Blown Acid Refined	10-12	A	171-186	7.72	3-5
Non-Break Raw	11-12	A	173-190	7.72	2-5
Non-Break Refined	7-10	A	173-190	7.72	3-5
Bleached Acid Refined	5-6	A	173-190	7.72	2-4
Alkali Refined	10-11	A	173-190	7.72	1-1.0
Alkali Refined Bleached	5-6	A	173-190	7.72	1-1.5
Bleached only	7-10	A	173-190	7.72	3-5
Completely Refined	5-6	A	173-190	7.72	1- .5

Table I

that is to be subjected to heat polymerization must be "break-free" or "break-stabilized".

Break stabilization is accomplished by gentle heating and agitation in a tank lined with superheated steam pipes at temperatures between 240° to 250° F. It takes several hours to dehydrate the break. Break stabilized oil is used as a low cost varnish oil when color is not an important factor.

Bleaching

Bleaching produces light colored, break-free varnish and paint oils of normal acid number. Formerly, oils were bleached by long exposure to sunlight. Nowadays oils are treated with about two or three percent of bleaching earth while mixing for several hours at 200° F. The coloring matter and ash constituents are absorbed by the bleaching earth. After filtering through a conventional plate and frame filter press, the resulting oil is light in color, break-free, and low in ash content.

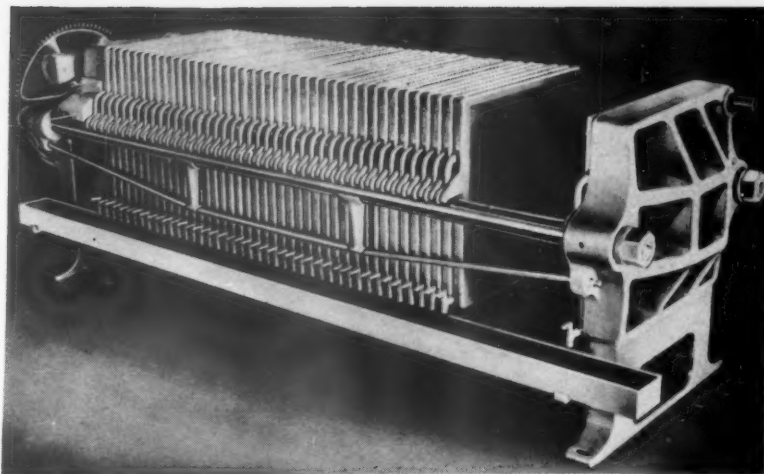
Acid Refining

For paint grinding with non-reactive pigments it is sometimes desirable to use a break-free varnish oil of high acidity. This is normally accomplished by acid refining.

The raw oil is agitated with small amounts of concentrated sulfuric acid. This has the effect of charring and flocculating the ash-forming matter, thereby forming an insoluble sludge. After settling, the sludge is drawn off from the bottom of the tank. This removes essentially all of the break and ash forming constituents of the raw oil. The remaining oil is then steam treated and washed to remove the residual sulfuric acid. The acid refined oil is break-free and contains a fair amount of free fatty acids as a result of the hydrolysis.

Alkali Refining

Heat polymerized or bodied oil of light color and low acid value are best produced from alkali refined oils. Raw oil, heated to about 140° F. is agitated with enough dilute caustic soda solution



Courtesy of D. R. Sperry & Co.

Typical Vegetable Oil Filter

to completely neutralize the free fatty acid content of the original oil plus a calculated excess. The soaps thus formed adsorb a major portion of the ash and break forming constituents of the oil. The soaps are then removed by a series of very carefully controlled hot and cold water washes. The washed oil is treated with several per cent of bleaching earth and then subjected to heat and high vacuum. The latter step simultaneously removes the emulsified water and bleaches the oil. After the vacuum treatment the spent bleaching earth is removed by filtration through a regular plate and frame filter press.

Refrigeration

All refined oils contain vegetable waxes and sterols which precipitate (appearing as a cloud or haze on standing) when the oil is heat polymerized. These waxes are removed by refrigerating or "winterizing" alkali refined oils in the following manner:

The oil is treated with a very small amount of filter aid, then cooled to 32° F. After several hours the waxes precipitate. The chilled oil is pumped

through a cooled plated and frame filter press to remove the precipitated waxes and filter aid.

Treated Oils

There are five categories of treated oils. They are: boiled oils, varnish oils, grinding oils, blown oils and polymerized oils. Distinctive properties make each valuable for different purposes.

Boiled Oils

Raw linseed oil normally takes four to six days to dry. Oils that have driers incorporated in them dry in fifteen hours or less. These are known as boiled oils.

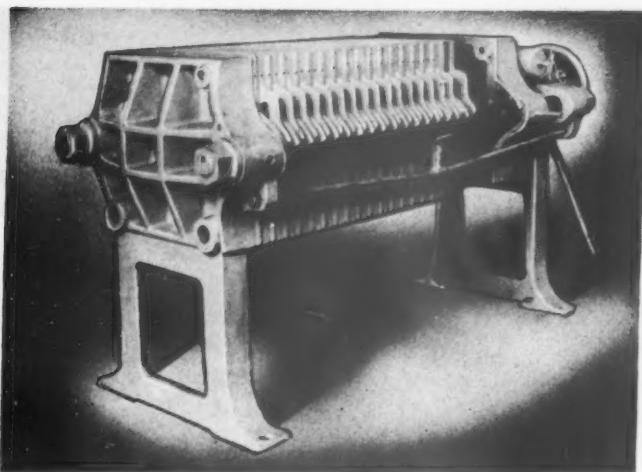
An old method of preparing boiled oils was to heat about 10% of the raw oil with manganese dioxide and litharge and then blend in the remaining oil. This resulted, in a dark, high acid oil containing a great deal of decomposed and insoluble matter.

Today boiled oils are prepared by incorporating certain catalysts, usually the permanently soluble organic salts of cobalt, manganese, or lead, into the raw oil. The oil is heated just enough to solubilize

TYPICAL BOILED OILS

Name	Color (Gardner)	Viscos. G-H	Iodine Number	Lbs./Gal. at 77° F.	Acid Number
Pale Boiled	10-11	B	168-185	7.74	3-6
Kettle Boiled	12-14	B	168-185	7.76	3-6
Kettle Double Boiled	12-14	B	168-185	7.78	4-7

Table II



Courtesy of D. R. Sperry & Co.

Typical Varnish and Synthetic Resin Filter

the driers. Some boiled oils are made by blowing the oil at 200° to 260° F. in the presence of driers. Some types, the pale boiled oils, are even blown in the absence of driers.

Boiled oils are rarely, if ever, used in varnish manufacture. Their major use lies in the manufacture of lead-in-oil exterior house paints. The faster drying boiled oils are used with pigments which normally retard drying; the light colored oils are used in white and pastel paints. Boiled oils are also used in asphaltum finishes and certain fabric coatings. (See Table II).

Varnish Oils

The term "varnish oil" generally implies a completely refined break-free oil. A fully refined oil, undergoes the complete refining process comprising alkali refining, bleaching, and refrigeration. Such an oil is especially adapted for manufacturing white and pastel enamels, light colored varnishes, non-seeding pale lithographic varnishes, etc.

Various other small refinements may be applied for individual preferences or special uses. If low acid and high consistency oils are desired, a small amount of organic catalyst should be added to the varnish oil. This results in faster bodying properties. For applications where the presence of vegetable waxes and sterols is not objectionable, for example in the manufacture of certain varnishes, printing inks, or leather finishes, a

refrigerated oil is unnecessary. In such cases a lower premium oil may be used instead of a fully refined oil. (See Table III).

Grinding Oils

The presence of free fatty acids is an important factor in grinding oils. It affects the dispersibility of pigments, for one thing. Most pigments are inadequately wetted by neutral or low acidity oils. Secondly, the interaction of the free acids with certain reactive pigments—white lead, for example—results in soap formation. This

is desirable because the plasticizing action of the lead soaps minimizes pigment settling in the paint and lengthens the life of the applied film. Of course the amount and type of free fatty acid must be carefully controlled to prevent excessive interaction which would lead to increased consistency, livering, or puffiness.

Grinding oils differ with respect to amount and kind of free acids, color, and viscosity. The usual method of preparing grinding oils is by acid refining. (See Table IV).

Blown Oils

Blown oils are oxidized oils prepared by passing finely divided bubbles of air through the oil for considerable periods of time. Temperatures between 180° to 250° F., with or without catalysts, are customarily employed. The viscosity and specific gravity increase as the oxidation is carried on; generally there is also an increase in color and in acid value. Blown oils may have oxygen contents as high as 20%.

In addition to becoming partly hydroxylated, the oil, on oxidation, yields peroxides, oxy-acids, their anhydrides, keto- and oxy-keto acids. Although the primary object of blowing is to produce an oxidized oil, some polymerization also occurs.

Because they are surface active,

TYPICAL VARNISH LINSEED OILS

Name	Color (Gardner)	Viscos. G-H	Iodine Number	Lbs/Gal. at 77° F.	Acid Number
Non Break Raw	11-12	A	173-190	7.72	2-5
Non Break Refined	7-10	A	173-190	7.72	3-5
Acid Bleached	5-6	A	173-190	7.72	2-4
Alkali Refined	10-11	A	173-190	7.72	.1-1.0
Bleached Alkali Refined	5-6	A	173-190	7.72	.1- .5
Bleached Only	7-10	A	173-190	7.72	3-5
Fully Refined	5-6	A	173-190	7.72	.1- .5
Catalyzed	5-6	A	173-190	7.72	.1- .5

Table III

TYPICAL GRINDING OILS

Name	Color (Gardner)	Viscos. G-H	Iodine Number	Lbs/Gal. at 77° F.	Acid Number
Non Staining Raw	8-10	A	173-190	7.72	2-4
Acid Refined	6-8	A	170-190	7.72	10-15

Table IV

blown oils aid pigment wetting. Although in general their solubility in mineral spirits is limited, some specially prepared miscible blown oils are much more soluble in aliphatic solvents.

The molecular size of heavily oxidized oils can be further increased by the addition of catalysts; this produces non-penetrating oils useful in the preparation of flat undercoater liquids. Films formed from blown oils are generally less resistant to water and alkali than those formed from polymerized oils.

Blown oils are used in many products besides paint; patent leathers, oilcloths, and lithographic varnishes, for example. Because oxidized semi-drying oils have pronounced plasticizing properties, they are also used in caulking compounds, putties, sealers, and lacquer modifiers. (See Table V).

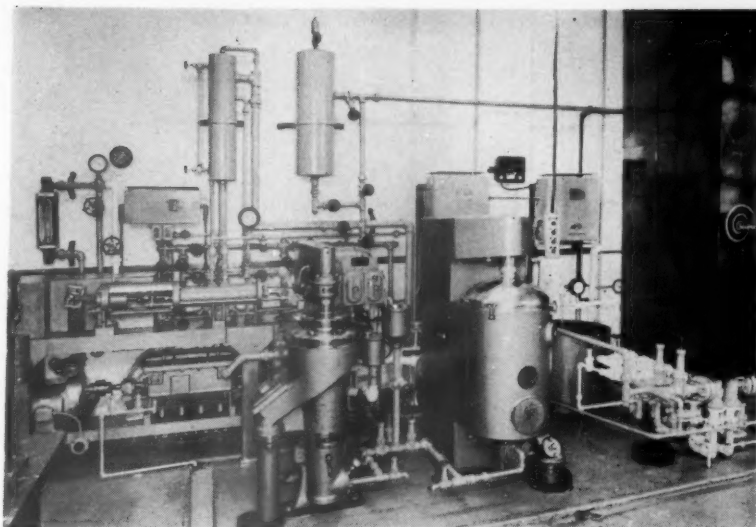
Polymerized Oils

Polymerized oils are generally heat bodied refined oils processed under conditions minimizing simultaneous oxidation. Thermal polymerization may be carried out in any of three ways—in an open kettle, under an inert gas blanket, or under vacuum in closed kettles. The temperature employed is generally in the 560° to 600° F. range. Regardless of the method used, the end products are essentially the same, provided that other conditions are equal. They do differ, however, in the amount of oxidized and decomposition products present in the oil.

The oils heated under vacuum polymerize faster and with better color retention. The acid value, specific gravity and refractive index increase simultaneously with increasing polymerization. As expected, the best films are obtained from low acid value vacuum polymerized oils.

The mechanism of heat bodying is quite involved and its discussion will be reserved for a later chapter.

Compared to unpolymerized oils, varnishes made from heat polymerized oils dry better, set faster, and possess better controlled flow, durability, color retention, and water and alkali resistance. They are particularly valuable where



Courtesy of the Sharples Corp.

Primary refining of vegetable oil in this research and demonstration refinery. Crude oil is mixed with a regulated quantity of reagent by the ratiometer and mixer unit (rear) and subjected to high centrifugal force in either of 2 centrifuges on left to remove contaminants.

TYPICAL OXIDIZED LINSEED OILS

Name	Color (Gardner)	Viscos. G-H	Iodine Number	Lbs/Gal. at 77° F.	Acid Number
Heavy Bodied Raw	9-11	Z2	115-130	8.19	5-8
Heavy Bodied Boiled	9-11	Z2	115-130	8.19	5-8
Miscible Blown	8-10	Z2	115-135	8.19	5-8

Table V

TYPICAL POLYMERIZED LINSEED OILS

Name	Color (Gardner)	Viscos. G-H	Iodine Number	Lbs/Gal. at 77° F.	Acid Number
Pale Heat Bodied Y	6-8	Y	125-140	8.00	6-9
Pale Heat Bodied Z2	6-8	Z2	115-130	8.00	6-9
Pale Heat Bodied Z3	6-8	Z3	115-130	8.03	8-12
Pale Heat Bodied Z5	6-8	Z5	110-125	8.03	8-12

Table VI

minimum penetration is desired. Larger quantities of thinners are necessary to produce workable paint consistencies. This lowers overall costs.

Certain defects inherent in polymerized oils cannot be overlooked. Incorrectly processed oils may result in objectionable livering with basic pigments—particularly with zinc oxide. Excessive polymerization may cause seediness, skinning, or brushing difficulties. On the other hand, sound formulating practices can usually avoid these troubles. (See Table VI).

These refinery processed oils have always been and remain today

the backbone of the paint industry. Many people realize, however, that this situation can not last indefinitely. Already more modern oil-based replacement products like alkyds, copolymers, and epoxy varnishes have begun to slowly edge out the old standbys.

We will discuss the chemical processes that have made these replacement products possible in due time. But first, for the sake of chronology, it would be well to review the physical processes resulting in close cut fractions. Part III, then, will deal in detail with physical methods of modifying oils.



A strategy planning conference is called when a customer solvent problem arrives at the laboratory. Picture at the left shows, left to right, L. C. Norton, technical field service representative, Dr. D. S. Herr, laboratory director, and group leader W. Steinmetz talking over plan of attack.

As Lacquer Technology Becomes More Complex. . .

Pictured below is a Shell designed bath which controls the temperature of Cannon-Fenske Viscometers to ± 0.02 of a degree C. This permits accurate viscosity measurements valuable in comparing the solvent power of various thinner formulations.

. . . Shell Chemical finds that unique tests are required to cope with customer problems.



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When a proposed formulation is decided upon, measurements of the evaporation rates of solvents and thinners, and the rate of evaporation from wet lacquer films are taken by a technician using the Shell Evaporometer.

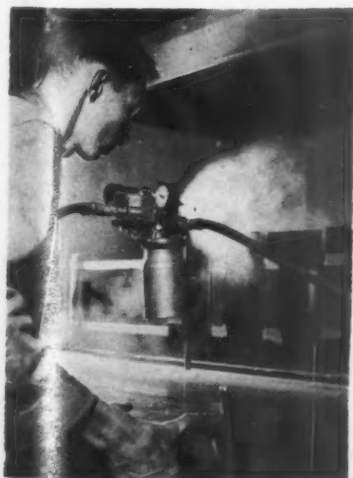


IN AN age marked by the high-pressured marketing of large production items, the Shell Customers' Service Laboratory at Union, New Jersey, may be something of an anachronism.

If it is, it is a happy one, because here tests are conducted aimed at developing new or improved uses for the company's solvents. But the laboratory also concentrates on specific customer problems, adding its own technical personnel and equipment to that of the consumer in a mutual study and examination of the consumer's needs and desires.

Shell Chemical markets 12 solvents for the lacquer industry,

When the proposed formula has passed preliminary tests, spray-characteristics are evaluated and panels prepared for flow evaluation. This is done by automatic spraying device.



which includes 5 alcohols, 4 ketones, 1 product (diacetone alcohol) containing both alcohol and ketone functional groups, 1 ether, and 1 glycol. These solvents cover a wide range of chemical and physical properties, offering quite a choice of flexibility to the lacquer producer or formulator. Often specific technical information is needed to aid the customer in selecting the best combination of solvents to meet his requirements. And here's where the laboratory comes into play. The problems dealt with are many and varied, of course. However, they can be boiled down to three general types

The laboratory also conducts long range studies on exposure test racks for measuring the weatherability of automotive lacquers. Inspections are made and recorded every month.



sometimes encountered with lacquer solvent systems or lacquer thinners:

1. Formulation difficulties
2. Improvement in quality
3. Reformulations to meet customer's special and cost requirements

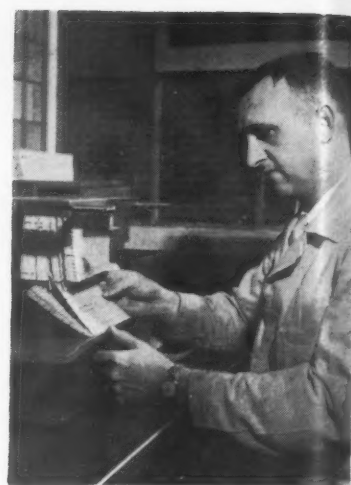
To solve these problems, Shell has devised several unique tests and, in some cases, special equipment, to measure and compare the performance of solvent blends. These are used along with tests standard in the industry to arrive at a solution of the customer's

A technician checks the blush resistance of the proposed formulation in the Shell designed blush resistance cabinet. Temperature and humidity may be varied at will.





A technician rates the film flow of the formulation to be recommended using the Shell developed flow comparator.



All information pertinent to a particular problem is cataloged in a unique punch card system. A technician thus has at his command all available data on a given subject.

problem. Here are some of the special tests and equipment used:

1. **Evaporation Rate**—The Shell Evaporometer measures the evaporation rates of solvents and thinners, and the evaporation rate from wet lacquer films. Temperature, humidity and air circulation rate are rigidly controlled yielding reproducible absolute values.
2. **Blush Resistance**—The Shell Blush Apparatus is used for this test. Samples are allowed to dry at different relative humidities making it possible to determine the relative humidity at which blushing occurs. Results are reported as per cent relative humidity at point of incipient blush at a temperature of 80° F. Blush data are considered accurate $\pm 2\%$ R.H. with this apparatus.
3. **Flow of Lacquers**—This test is performed on a special Flow Comparator developed by Shell to provide accurate measurement of this important lacquer property.

The information provided by the laboratory's results, together with customer's experience, provides an answer to their problem. Here Norton, right, of Shell, talks over the new formulation with Royal Brown, chief chemist, Egyptian Lacquer Manufacturing Co., S. Kearny, N. J.

Glass panels sprayed with the test lacquers are matched against fixed standards on the Shell Flow Comparator. The flow standards consist of 10 lacquered glass panels representing gradations in flow from 10, which represents perfect flow (plate glass, black lacquer on back), to 1, which represents very poor flow. Flow ratings are made on this instrument by matching the image clarity of various sizes of the letter "E" projected onto

the test panels and the flow standard panels.

The panels are sprayed by an automatic spraying device to provide fixed application conditions and to eliminate the human element. This device may also be used to study the spraying characteristics of lacquers and thinners.

Other important tests useful in comparing performance of solvent systems can be of immeasurable aid to the chemist in solving his problem: Viscosity measurements, (Turn to page 73)



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*Dr. J. E. Norton, Laboratory Director, Division of Printing at the Shell Chemical Co., 19, 1954

STRUCTURE OF BODIED OILS

By
Jean Petit*

IT MAY seem strange at this late date to devote time to the study of the polymerization of drying oils, which superficially seems so well known. This process, which all paint and varnish technologists have practiced on some scale or other, gives rise to products which have great utility, even in the face of the extensive developments in synthetic resins which we have now.

A brief review of the general aspects of the phenomenon of oil bodying will give us a background against which we can discuss certain contradictory observations which must be explained.

Diels-Alder Reaction

When a drying oil is heated to a temperature of about 300°C in an inert atmosphere, for times depending upon the nature of the oil and the final product desired, a significant increase in viscosity will be noted. This increase is due to a purely polymeric reaction, produced by the union of the acid radicals of the glycerin triester molecules, and thus resulting in an increase in molecular weight. The bond between two hydrocarbon chains arises from a Diels-Alder type of reaction between conjugated double bonds, either originally present in the

oil molecule or formed from isolated double bonds by thermal isomerization. Thus, a substantial number of dimeric acid esters are formed from two C₁₈ acids, and a smaller number of trimeric acids, C₅₄ are formed due to the presence of trienoic acids in the oils used while the mono-unsaturated acids present do not take part in the reaction. The bodied oil obtained is, therefore, no longer an oil, in the usual sense of the word, but rather a macromolecular material belonging to the class of polyesters, resulting from the condensation of mono-, di-, and trimeric acids with a triol, which is the glycerol.

The fact that this polyester is formed by polymerization rather than by polycondensation makes these polymers similar to the polymers of diallyl phthalate.

Everything would be satisfactory if the bodying of the oil would take place, in fact, according to this scheme. It would then be possible, by numerous and judicious calculations, to predict the course and product of the reaction, which physical chemists would not have failed to do. What is actually happening, however, is that the major polymeric reaction just described has superimposed on it various secondary reactions which modify its course in surprising ways.

A student of thermodynamics, for example, would be very surprised to discover that the bodying

occurs much more rapidly under vacuum than under normal pressure, and it is unlikely that he could account for this by the usual calculations of his art.

It is well known, however, that the increase in viscosity of a linseed oil is much more rapid under reduced pressure and that it invariably results in a gel, a phenomenon never observed under normal conditions. No thermodynamic law, however, allows for such an interpretation.

Secondary Reactions

A closer study of the apparent irregularity will show that secondary reactions account for the discrepancy. Besides the purely polymeric reaction mentioned above there are certain side reactions involving the cracking of the hydrocarbon chains. These have not been specifically studied, to any degree, in vegetable oils, but they are responsible for many supplementary phenomena, such as the increase in the acid number of bodied oils, the release of different volatile products in the course of the process, and the development of darker colors in the oils. These aspects of the cracking reaction are well known, but there are some which are less familiar.

In the oil cloth industry, it is the practice to use linseed oil which has undergone prolonged thermal treatment, often lasting several days, and it is generally

*Dr. Jean Petit, director of the Paint and Varnish Laboratories, Bellevue, France. This paper was presented through the sponsorship of the Federation of Technical Associations of the Paint and Printing Ink Industries in Continental Europe at the 32nd Annual Meeting of the Federation of Paint and Varnish Production Club. November 19, 1954 in Chicago, Ill.

considered that these oils have a higher degree of polymerization than the bodied oils used in paints. This is based on no evidence other than the higher viscosity.

It is easy to show, experimentally, that these oils contain a relatively high proportion of unsaponifiable matter (between 5 and 10%) where the original oil contained less than 1%. Actually, the increased elasticity of coatings obtained from these oils is due to presence in the film of compounds resulting from the cracking reaction during the heating. It is also easy to detect, in these films, the odor of ethylenic hydrocarbons.

If all that was produced by this heating process was a highly polymerized oil, it would probably have been a gelatinous mass, insoluble in all solvents, and unusable for the purposes intended. Then again, the odor during the bodying of the oil is that of ethylene hydrocarbons, rather than that of acrolein. The latter would make the atmosphere around the kettle unbearable.

One could carry out this treatment under reduced pressure, which is often done industrially, and in this case the aspect of the phenomenon is radically changed. In this case, a gelling of the linseed oil will be noted after a heating period which, under normal pressure, would have produced only the slightest increase in viscosity.

This phenomenon, studied by others in detail (1), is also the result of cracking of the carbon chain of the acid radicals. It can be shown that this break takes place primarily in the central part of the radical, in the vicinity of the double bond. From this break two free radicals arise, one purely hydrocarbon and the other carrying the acid function.

According to the conditions, these radicals could rearrange in various manners. By acquisition of hydrogen, hydrocarbon chains with the same number of carbon atoms as the radical could be formed, leading to volatile hydrocarbons and to acids with a terminal double bond. If this acid is always esterified with glycerin, the reactivity of the glyceride is increased.

This is the case, primarily,

with polymerization under reduced pressure, where the cracked products are eliminated from the oil as rapidly as they are formed, avoiding, in large measure, the reactions called "reforming".

On the other hand, if the reaction is conducted at ordinary pressures, the cracking products are eliminated much more slowly from the reaction medium and other reactions may intervene. For example, two or more hydrocarbon radicals might fuse, yielding heavier hydrocarbons which are much less volatile. Alternatively, one or more carbon radicals could react with the normal acid radicals or those resulting from cracking, leading to the formation of mono-unsaturated acids, randomly branched and incapable of polymerization. This would greatly reduce the tendency of the oil to gel.

It is also possible for the acid radicals originating from cracking to unite with each other, forming diacids. In this case, polymerization could occur in the oils, even if they are non-drying, provided that the cracking is sufficiently severe to lead to a substantial quantity of dimeric acids. For example, this is the case with olive oil which can be gelled by heating in a vacuum, if the heating is prolonged enough to lead to significant cracking (2).

Further, it should be mentioned that the occurrence of any one of these reactions is strictly a matter of chance, and it is only by careful control of temperature and pressure that is possible to make the polymerization take the desired direction, even in part.

These reactions also enter during the polymerization of fatty acids, and it is not always possible to get the desired results, even when operating under steam pressure.

Another reaction which appears during the course of heat bodying which deserves mention is that of transesterification. It is well known that prolonged heating at a relatively high temperature favors the random rearrangement of the acid radicals amongst the glyceryl radicals. During the bodying of linseed oil, which takes a long time, these reactions are always present, and the consequence is a certain limitation on the size

of the macromolecules formed.

In the case of tung oil, the polymerization is much more rapid because of the higher functionality of the molecules and because the double bonds, being already conjugated, do not require a preliminary thermal isomerization. The three-dimensional system is rapidly formed before transesterification reactions have time to operate.

This ends up with the paradox that a gelled tung oil will contain 35% of dimeric and trimeric acids, while a bodied linseed oil, still far short of gelation, will contain 60%.

These transesterification reactions are not of purely theoretical interest. We have demonstrated in the laboratory that it is possible, by transesterification, to reduce the degree of polymerization of gelled oil and of oil-modified alkyds, by prolonged heating with raw linseed oil. In practice, this would enable us to bring back into solution unusable masses of gelled oil, and retain their desirable properties.

Effect of Boron Trifluoride

Finally, to end this discussion, we will comment on the catalytic effect of boron trifluoride on the bodying of oils. (4)

The use of this catalyst markedly lowers the effective temperature for the bodying of linseed oil. However, it is useless with tung oil, since even the smallest amounts result in gelation at room temperatures.

For example, the normal amount of bodying of a linseed oil will take place in an hour at 95°C. Under the same conditions, at 105°C, gelation, with the release of substantial amounts of heat will occur after 10 minutes. The bodied oils obtained, freed from catalyst by washing with water, always have a low acid number, never more than 5, and dry much better than comparable bodied oils obtained by the conventional methods of heating.

The scope of this paper does not allow the presentation of more detail on this interesting subject of catalysis, but it is possible to give some figures which show that the course of this reaction with

(Turn to page 87)

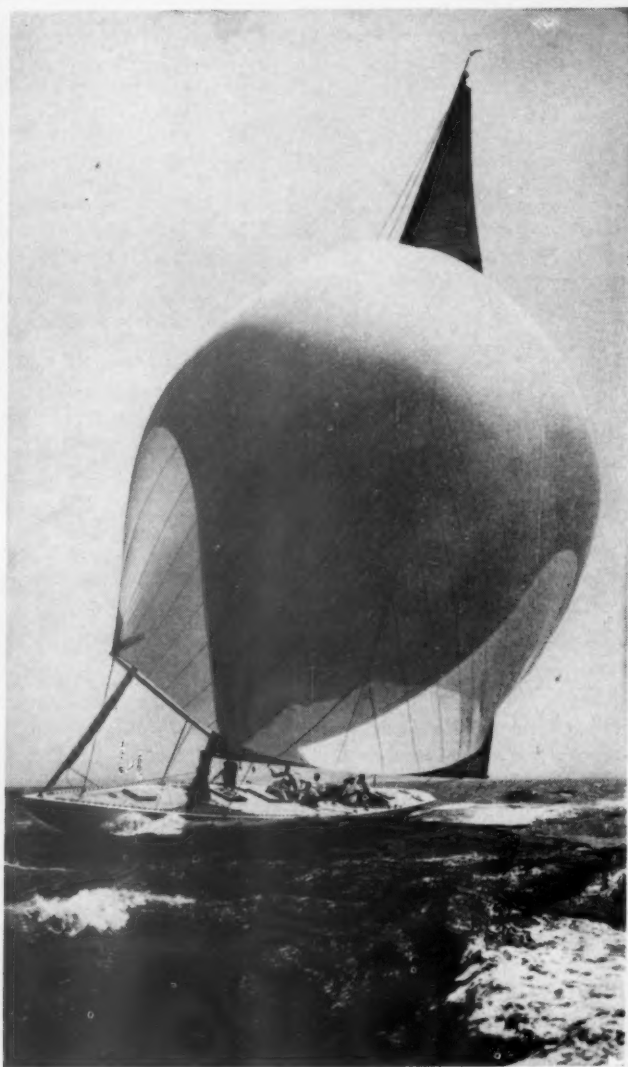
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Decyl Alcohol
Denatured Ethyl Alcohol

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PETROHOL 95
PETROHOL 99
JAYSOL
Iso-Octyl Alcohol
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Denatured Ethyl Alcohol
Tridecyl Alcohol
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News of Paint and Varnish Production Club Meetings

NEW YORK

A talk on "New Trends in Colored House Paints" by Dr. Wesley G. Vannoy of the E. I. Du Pont de Nemours Pigments Dept. was the highlight of the Jan. 6 meeting. It was attended by 260 members and guests and was held at the Brass Rail Restaurant, 100 Park Ave., New York City.



Wesley G. Vannoy addressing the New York Production Club meeting

Vice Pres. Irving Flaumenhaft welcomed Arend Helms of the Bergeolin Paint Co., Bremen, Germany, who is here as a foreign exchange student, comparing American and German methods of paint manufacture.

In his talk Dr. Vannoy said that he considers improvements possible in tint retention performance of exterior house paints, and that these improvements are in keeping with the increasing swing toward color in this field. Bright, durable oil based house paints can be made with phthalo blue, phthalo green, para-chlor red, and medium chrome yellow, while iron oxide pigments will exhibit very good fade resistance at a sacrifice in brightness. The tint retention of these oil paints can be further improved by replacing magnesium silicate extender with selected calcium carbonate.

In alkyd type blister resistant formulations, good mildew control is experienced using phthalo blue, phthalo green, iron oxide red and nickel azo complex yellow, while poor mildew resistance is evidenced by cadmium yellow. It also appears that tint retention properties improve in these alkyd formulations as the PV is decreased from 30 to 19 per cent.

Over a limited test period, certain polyvinyl acetate and acrylic emulsion coatings have demonstrated good durability and outstanding color retention properties over yellow pine, glazed

asbestos shingles, and porous cement coated asbestos shingles. Promising colors for use in these paints are non chalking rutile titanium dioxide in combination with para-chlor red, phthalo green, phthalo blue, nickel azo yellow and toluidine yellow.

The data presented, excellently illustrated by color slides, include results of panel and house exposures in Delaware and southern California. It is Dr. Vannoy's view that much more data must be assembled before definite conclusions may be drawn regarding the performance of the new emulsion systems, but performance results up to now are encouraging.

New members welcomed into the club were: Class A; Richard K. Hazen, N. Y. Woodfinishers Supply Co.; Maurice E. Renner, Aula Chemicals, Inc.; Paul Renz, Aula Chemicals, Inc. Class A Transfer: Murray Guttenplan, Pur-All Paint Prod.

NORTHWESTERN

The January meeting, held in the Town & Country Club, St. Paul, Minn., was called to order by President Elmer Stark with 57 members and guests present. The minutes of the December meeting were read and approved.

Mert Hilke, chairman of the program committee, announced that the Feb. meeting would feature "Trends in Colored House Paints" by the DuPont Co.

John Rouse, chairman of membership committee gave the name of J. R. Keller of Western Paint in Duluth the first reading for Class A membership.

G. W. Gregg, of the Advance Solvents Corp., spoke on "The Role of Zirconium and Rare Earth Metals For The Protective Coating Industry." He discussed the development of the zirconium industry and its use as a drier catalyst in fume proof house paints, 4 hour enamels, ready-mixed aluminum paints, and industrial finishes. He said that "Zirco" can never be used alone except with styrenated alkyds. It must be used in combination with cobalt or manganese driers.

LOUISVILLE

The December 15th meeting was held at the Seelbach Hotel, 63 members and guests attending.

President Hardy Brinly made his report for the year 1954.

To promote membership activity the dues and membership requirements were changed. Membership for Class A and B will be \$7.50 including the

Digest. Salesman and raw material suppliers will be \$10.00 for membership including the Digest. Dinners will be \$3.00 each for those attending for dinner ticket.

C. M. Jackson reported on the corrosion project at N. Dakota.

J. M. Thomas of Jones-Dabney Co. spoke on "Modern Resins for the Coating Industry." Alkyds, latex resins and epoxy resins were characterized. The desirable and undesirable features of each were explained. Newer developments were noted. P.V.A. was considered as the best of the lot for latex. It was forecast that in the copolymer field, thinking was towards the use of more than two monomers.

KANSAS CITY

The first meeting of the year was held on Jan. 13, at the Pickwick Hotel in Kansas City with 40 members and guests present. President Wormser introduced as guests O. L. Nikles and Ben Stranz of the Shell Chemical Co., Mike Bartkoski of the Revilo Paint Co., and Bill Ackenhausen, David McGuire and Warren Manley of the Cook Paint and Varnish Co.

The minutes of the previous meeting were read and accepted.

President Wormser referred to a meeting of club officers held at the recent Chicago convention in which there was considerable discussion regarding the by-laws of the Federation. It seems that the club has not been complying with these by-laws and it is in order it become familiar with them and apply them as needed. Mr. Wormser went briefly through the mechanism of the acceptance of a member.

The secretary read a letter from the president of the Southern Paint and Varnish Production Club inviting the officers and members of the Kansas City club to attend their spring convention to be held on March 3rd through the 5th, 1955 at the Biltmore Hotel in Atlanta, Ga.

Mr. Niewrzal reported that the technical committee, committed to prepare a paper to be ready in early July, should start work on it shortly.

Mr. Wormser read a communication from C. Homer Flynn, Executive Secretary of the Federation of Paint and Varnish Production Clubs regarding the extension of the boundaries of the Dallas Paint and Varnish Production Club. After much discussion it was decided that a committee be appointed to investigate this move. This committee, which was named by President Wormser, consists of Marvin Newton, Riley Wilderson and Russ Griswold, chairman, was instructed to report its findings at the next meeting.

(Turn to page 74)

PRODUCTION TIPS

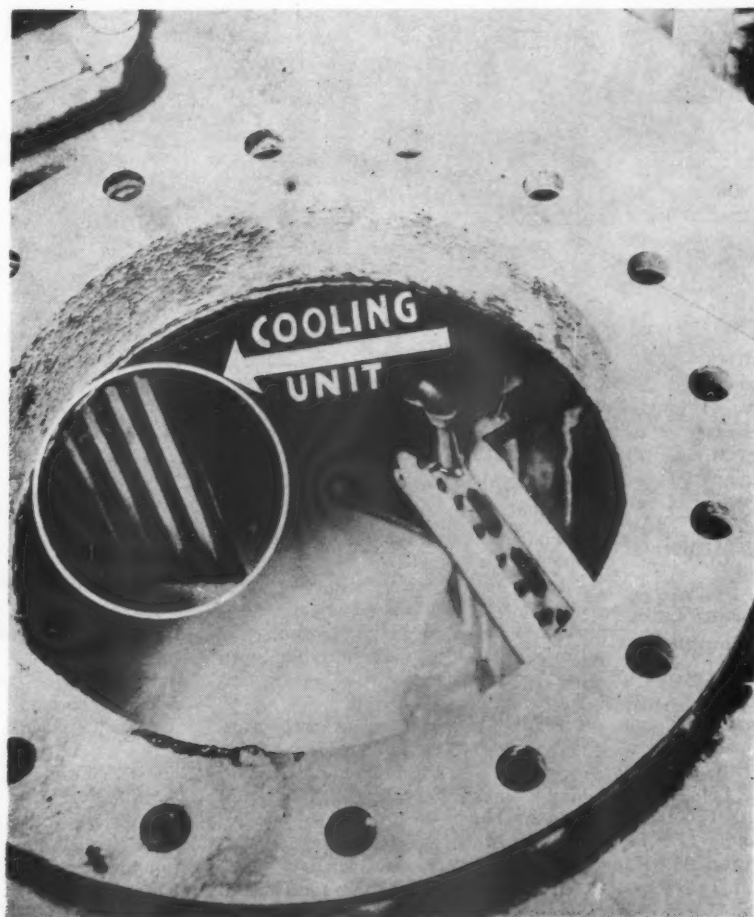
From time to time PAINT AND VARNISH PRODUCTION will present in this section information which will be of interest to those connected with the various phases of paint and varnish manufacturing. These bits of information are intended to help reduce operation costs, save time and labor, simplify methods and procedures.

Your comments and ideas are most welcomed.

Plate coil unit for cooling slurry cuts maintenance costs and time at Sherwin-Williams plant.

EASE of replacement with consequent savings in maintenance time and labor led the Sherwin-Williams Company Chicago plant to replace pipe coil with a newer type of heat transfer unit (see photo) for cooling slurry in an agitated tank. The unit consists of two embossed sheets of metal welded together to form channels for passage of heating and cooling media. Six of the units are installed vertically in the 3,000 gallon tank and can be removed and replaced through a manhole in the cover. With pipe coil, replacement, repair or cleaning necessitated removal of the agitator, motor and the bolted-down cover. In addition, cooling is now accomplished without fouling of the surface due to deposition of solids on the coil. The vertical placement of this unit is said to help reduce this condition.

This unit is sold under the trade name of "Platecoil" and is manufactured by the Tranter Manufacturing, Inc., Lansing 4, Michigan.



NEWS

Du Pont College Fund to Help Improve Science, Math Teaching

A fund of \$291,000 for grants to universities and colleges to help improve the teaching of science and mathematics has been announced by the Du Pont Co. as part of its \$800,000 aid-to-education program for 1955-56.

There are three separate parts to the support of teaching, which is the most recent development in the company's program.

In the newest phase, \$75,000 will go for summer and winter fellowships for master's degree training for high school science and mathematics teachers; \$125,000 to advance the teaching of chemistry in 50 privately supported institutions, mostly liberal arts colleges; \$91,000 for 24 postgraduate teaching assistantships in chemistry.

The support for better teaching has been worked out in cooperation with educators throughout the nation.

It is now the largest single part of the company's aid-to-education program, which for many years has also provided grants for fundamental research and postgraduate fellowships. The enlarged program will assist more than 100 institutions in the next academic year.

As in previous years, Du Pont is making the awards to selected colleges and universities and leaving decisions on detailed use of the funds up to them.

Chadeloid Appoints Davis & Davis Midwestern Representatives

Chadeloid Corp. has announced the appointment of Davis & Davis, Chicago, Ill., as midwestern representatives to serve the area of Illinois, Minnesota, Wisconsin, and parts of Indiana, Michigan, and Iowa with a new line of vehicles and resins developed by Chadeloid for the wood finishing industry.

Dow Chemical Co. to Feature Latex Paints at New Orleans Convention

Latex paints for both interior decorating and exterior masonry surfaces will be featured in The Dow Chemical Co. exhibit at the National Painters and Decorators of America convention, New Orleans, La., Feb. 7-11.

Dow personnel attending the show will include F. J. Gunn, M.H.P. Morand, J. C. Baumgartner, M. R. Johnson, and Don Stark. The company will display in booths 43 and 44.



F. J. Licata, technical director (left), and O. E. Lohrke, sales manager, of the Metasap Chemical Co. are shown, in the photo to the left, examining a report in the new, completely equipped testing and research laboratory recently opened by the company at its Harrison, N. J. plant. Photo to the right shows a technician testing a stabilizer in a floor tile mixture on a rubber mill. Mr. Licata will supervise the lab.



Paint, Varnish, Lacquer Industry Enjoys Best November in History

The paint, varnish and lacquer industry enjoyed its best November in history by achieving a dollar volume of sales amounting to \$103,132,000, according to General Joseph F. Battley, President of the National Paint, Varnish and Lacquer Association.

Official sales figures, released by the Bureau of the Census, show that November 1954 provided a \$325,000 gain over the previous best November, in 1950, when sales figures totaled \$102,807,000.

November sales in the industry also were up 4.7 percent over the same month in 1953 when sales totaled \$98,539,000. General Battley also pointed to the November 1944 figure of \$53,503,000, to show the tremendous growth of the industry in the past ten years.

Particularly noteworthy, was the across the board increases for all types of reported sales. Every division showed an increase over November 1953.

Trade sales of products for home and consumer use rose 3.2 percent over

November last year with total sales of \$59,684,000. Industrial sales showed an even larger advance by reporting \$43,448,000 for November, an increase of 6.7 percent over November 1953.

Spurred by the increased business in the automotive and furniture manufacturing industries, the sales of lacquers provided the biggest percentage of rise with a total of \$12,024,000 reflecting an 18.4 advantage over November 1953. Paints and varnishes also held well in the industrial field by reporting sales of \$31,424,000, 2.8 percent above 1953.

Cumulative sales for the eleven months ending with November now stand at \$1,267,251,000, according to President Battley, compared to a total of \$1,310,176,000 for 1953. This represents only a 3.3 percent decrease from the record setting pace of last year.

Trade sales for the eleven month period are off only 0.3 percent with a 1954 total of \$786,096,000 compared to \$788,086,000 last year.

Industrial sales in 1954, including November, now total \$481,155,000, a decrease of 7.8 percent from 1953.

Big Mica "Strike" Reported In Southwestern North Carolina

The Minerals Processing Co. of La-Grange, Ga. claims one of the biggest "strikes" in the recent history of mica-mining has been made in the southwestern corner of North Carolina near Cowee township in agricultural Macon county which borders on Georgia and South Carolina.

Frank Siersma, president of the company, stated that outside experts estimated that the property contains a large tonnage of good quality and valuable block Mica.

Block Mica is currently on the Government's "strategic minerals list" and is being stockpiled by the General Services Administration.

Harry A. Hall, Jr. Acquires Control Of Kyanize Paints, Inc.

Harry A. Hall, Jr. has acquired financial control of Kyanize Paints, Inc., it was announced at the annual stockholders' meeting.

Newly elected to the board of directors were Harry A. Hall III, company purchasing agent, and Carleton Spencer, Boston attorney. Directors re-elected included Hildreth Auer, W. Wesley Gilmour, Harry A. Hall, Jr., Alfred E. Howell, Franklin J. Lane, Renshaw Smith, Jr., Virgil W. Tobey and J. VanVloten.

Re-elected officers for the corporation are Renshaw Smith, Jr., president; Harry A. Hall, Jr., vice president and treasurer; Alfred E. Howell, secretary.

Just 28 words

to tell our steel container story

Colorfully lithographed, Continental steel containers become an integral part of your package family. When emptied and put to other uses, they continue to sell your name and product.



TAILOR-MADE
PACKAGE SERVICE

**CONTINENTAL
CAN COMPANY**

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

*What helps prevent blistering
and flaking of stucco paints?*



**CELITE diatomite pigments
form a permeable film
for vapor escape**



Photomicrograph shows porous structure of Celite particles which permits passage of moisture through paint film.

COLD WEATHER spells trouble for stucco paint. For the colder it gets the greater the vapor pressure due to the temperature differential. When paint resists this pressure, serious blistering and flaking result. But when Celite* is present in the formulation, the moisture passes through a vapor-permeable film formed by the microscopic particles. Yet this same film will resist the penetration of exterior moisture.

Celite helps paint withstand the assaults of severe weather on the outside, too. Its hard, tough, silica composition provides extra strength and durability. And the flexible interlacing structure of the particles readily permits the film to expand and contract with temperature changes.

Celite also helps when the paint is applied. Its porosity shortens drying time and its superior dry hiding power provides excellent coverage... frequently at the saving of prime pigment. Find out more about these extender pigments. Write today to Johns-Manville, Box 60, New York 16, N. Y.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products



Johns-Manville CELITE THE EXTENDER PIGMENTS
FOR ALL COATINGS

NEWS

L. A. Olson Retires; First Employee Of Great Western Paint Corp.

Lawrence A. Olson, General Salesmanager of the Great Western Paint Manufacturing Corp., has retired after 43 years with the company. He was the firm's first employee and remained with company throughout his business lifetime.



L. A. Olson

As the only employee, Mr. Olson's first job was mixing paint by hand in the one-room factory. As the company grew, Mr. Olson became its first salesman. In 1947 he was made Assistant Salesmanager, and in 1948 was appointed Salesmanager in charge of all dealer sales.

In announcing Mr. Olson's retirement, Fred N. Redheffer, President of the company, said that William H. Russell, Vice-President, would become Director of Dealer Sales.

Visual Appeal and Label Designs Factors in Choosing Top Packages

Eye appeal and label designs were important factors in the choosing of the top packages in each of ten classifications and the grand award winner in the third annual aerosol packaging contest sponsored by the Chemical Specialties Manufacturers Association held in New York December 7.

Lilly Dache Invisible Net hair spray packaged in "Spra-Tainer" by the Can Div. of Crown Cork & Seal Co., Inc. not only won first place in the hair preparations class but was judged the top package among 282 entries in the national contest.

The winner in the paint classification was "Safe-Ti-Strip" Paint Remover, product of Bostwick Laboratories, Inc., Bridgeport, Conn.

Plaque awards were presented at an association luncheon held at the Hotel New Yorker. Frederick G. Lodes of the Precision Valve Corp. and chairman of the aerosol festival committee made the presentations. The packages were displayed among hundreds of others in the Aerosol Festival exhibit during the Association's 41st annual meeting held recently.



Branch managers and sales representatives of Truscon Laboratories who heard outlines of new sales, advertising and promotion policies for paints, concrete admixes, and floor treatments in conferences recently held in Detroit. The meeting was conducted by James E. Blue (third from left, first row), assisted by Glen Mooney (second from left, second row). R. E. Madison (fourth from left, first row), Technical Director, demonstrated features of three new products planned to be released at an early date.

SOUTHERN CLUB'S 19th CONVENTION TO BE HELD IN ATLANTA, MARCH 2-4

Parker W. Layman, Secretary-Treasurer of the Southern Paint and Varnish Production Club has announced plans for the 19th annual convention to be held March 2-4, at the Atlanta-Biltmore Hotel, Atlanta, Ga.

Interest in the convention has increased yearly and officials expect the largest registration in the club's history. Greater interest in this year stems partly from the easily accessible location of the meeting and the large concentration of paint manufacturers in the Atlanta area.

The following firms have engaged exhibit space for the Machinery and Raw Material Exhibit which will be held in the spacious new exhibit hall recently erected at the convention hotel:

Advance Solvents & Chemical Corporation; Archer-Daniels-Midland Company; Buckman Laboratories, Inc.; Burks & Company, Charles L.; Cabot, Inc.; Godfrey L.; Carbide & Carbon Chemicals Company; Dow Chemical Company; Epworth Mfg. Corporation; Goodyear Tire & Rubber Company, Inc.; Harshaw Chemical Company; Hercules Powder Company; Hockmeyer & Company; Herman; Hopkins Company, R. T.; Jones & Laughlin Steel Corporation; Kinetic Dispersion Corporation; Metals Disintegrating Company, Inc.; Mineral Pigments Corporation; Minerals & Chemicals Corporation of America; Naftone, Inc.; National Starch Products; Nuodex Products Company; Reichhold Chemicals, Inc.; Shell Chemical Corporation; Thibaut & Walker Company, Inc., and Vulcan Steel Container Company.

D. D. Wyatt of Minnesota Paints, Inc., Atlanta, Ga. is chairman of the Exhibit Committee and information concerning available booth spaces may be had by contacting him.

A program of paramount interest will include two technical papers, a round table discussion, moderated by John Moore of the Scientific Section, on "Exterior Masonry Paints," and the popular Open Forum, MCed by "Colonel" Billy Hood.

The registration desk will be open Wednesday, March 2 from 2-5 PM and will reopen at 8:00 AM Thursday, March 3.

Reservations for hotel accommodations should be made through Housing Committee Chairman F. W. Frew, P. O. Box 188, Decatur, Ga.

Tung Oil Products, Inc. Moves Firm From Brooker to Gainesville, Florida

Tung Oil Products, Inc., manufacturers of finishes from pure American tung oil, has moved plant, facilities and office from Brooker to Gainesville, Fla.

An increase in business made it necessary for the company to have a larger plant on a location with sufficient room to permit further growth, according to Hewlett S. Anderson, vice president & general manager.

The new building, built to the company's specifications, is one and one-half stories and has 10,000 square feet.

NEWS

Paint, Varnish and Lacquer Ass'n Urges Bill Opposition

The New York Paint, Varnish and Lacquer Association has urged opposition to the following measures introduced in the New York Legislature.

1. Assembly 405 (LaFauci) provides that the New York penal law would be amended to prohibit the manufacture or sale of any article of furniture designed for children if finished with paint or enamel containing a poisonous or other harmful and deleterious substance.

The association claims that the bill goes far in excess of what is being done in the City of New York in requiring finishes containing in excess of 1% of lead to be appropriately labeled.

2. New York Assembly 466 and Senate 311 are identical bills that would prohibit the sale of paints and enamels after Jan. 1, 1956 if they contained any lead, unless the label stated that one of the ingredients was lead and the container had a warning placed thereon that such contents were poisonous.

The association says this measure would be in conflict with the standard or model labeling provisions which have been approved by the industry's committee concerning the subject, and would cause conflicts between regulatory measures.

Pratt & Lambert, Inc. Awarded Certificate for Management

Pratt & Lambert, Inc., Buffalo, N. Y., a Paint, Varnish and Lacquer company has been awarded a Certificate of Management Excellence for 1954 in the sixth annual management survey by the American Institute of Management.

The company is among the 379 American and Canadian firms receiving the management citation after a continuing study of the operations of thousands of companies.

Jackson Martindell, president of the non-profit research foundation said that the Institute examines a management in the areas of economic function, corporate structure, health of earnings, fairness to stockholders, research and development, directorate analysis, fiscal policies, production efficiency, sales vigor, and executive evaluation.



G. H. Morehouse



H. N. Meyer Jr.

Morehouse Industries Buys Cowles Dissolver Business

G. H. Morehouse and L. P. Smoot, owners of Morehouse Industries of Los Angeles, Calif., have announced purchase of the Cowles Dissolver business of the Cowles Company, Inc., Cayuga, N. Y. The purchase includes the plant facilities, land, buildings, machinery, inventory and equipment.

The Cowles Dissolver is a specialized type of machinery designed to accomplish dissolving of particles of material in solution at exceptionally high speed. General manager of the Dissolver manufacturing facilities under the new owners, who will operate as the Cowles Dissolver Co., Cayuga, N. Y., is Horton N. Meyer, Jr., who was formerly associated with the Cowles Company, Inc., for over seven years.

Minerals & Chemicals Corp. Appoints Boston Distributor

Minerals & Chemicals Corp. of America, Metuchen, N. J., has appointed T. C. Ashley & Co., Boston, Mass., as exclusive distributor for both "Edgar Asp" products and "Atapulgus" Products in the states of Maine, New Hampshire, Vermont, eastern Massachusetts, Rhode Island and eastern Connecticut. T. C. Ashley & Co. will maintain warehouse stocks in the Boston area.

Six Papers and Panel Discussion To Highlight Coatings Conference

Six technical papers and a panel discussion on the place of the chemist in the paint industry, will highlight the 9th Divisional Conference of the Protective Coatings Division of The Chemical Institute of Canada. The conference will be held in Toronto at the Royal York Hotel on Feb. 24, and will be repeated in Montreal on the 25th at the Ritz Carlton Hotel.

The luncheon speaker both times will be C. A. Burton, National Trust Co. Limited of Toronto, who will talk on "The 'U' and the 'I' of Business".

The technical program follows:

"Flame Photometry and Spectrophotometry and their Application to the Paint Industry," David S. Cox, Sherwin-Williams Co. of Canada Ltd.

"The Use of 2,2,6,6-Tetramethylol-cyclohexanol in Alkyd Resins and Related Coating Vehicles," T. H. G. Michael, Howards & Sons (Canada) Ltd.

"Water Resistance of Alkyd Resins," W.R.R. Park, Canadian Industries (1954) Ltd.

"Current Developments and Future Trends in the Paint Industry," H. O. Farr, Canadian Pittsburgh Industries Ltd.

"Insulating Varnishes and Functional Evaluation," L. P. Mahon, Canadian General Electric Company Ltd.

"Trends in Colored House Paints," W. G. Vannoy, DuPont Co. of Canada Ltd.

Panel Discussion—The Place of the Chemist in the Paint Industry. From the point of view of: the sales manager—J. R. Law, Canadian Industries (1954) Ltd.; the production manager—E. P. Lantier, Sherwin-Williams Co. of Canada Ltd.; the president—J. W. Meredith, Roxalin of Canada Ltd.



Alfred P. Stresen-Reuter (center), President of Fred'k A. Stresen-Reuter, Inc., with 25 year company veterans Walter Schumacher (left) and John Epps at company dinner.

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or
better
lacquers...

USE

**CARBIDE'S
SOLVENTS**

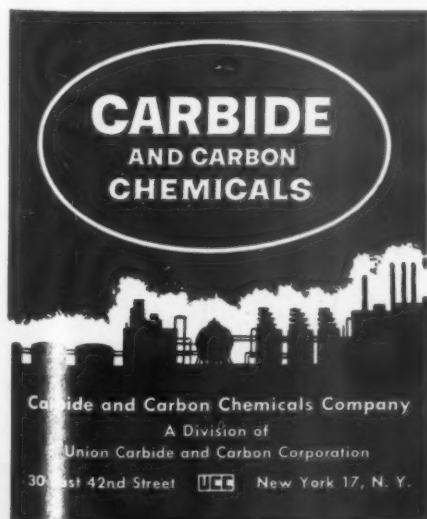


Whether you use esters, ketones, alcohols, or glycol-ethers—the CARBIDE technical representative will give you unbiased help in selecting the best solvents for your use.

Two solvents, ethyl acetate and isopropyl acetate, are low-boiling or fast-evaporating esters that have served the lacquer industry faithfully for many years. Ethyl acetate combines high solvency with low lacquer viscosity. In addition, it has a pleasant odor. For a slower evaporating solvent, with relatively high blush resistance, choose isopropyl acetate.

for Further Information

on ethyl acetate or isopropyl acetate, ask your nearest CARBIDE office for the book "Esters" (F-4766). If you want information on all of CARBIDE's solvents and plasticizers useful in lacquers ask for "Solvents" (F-7465). In Canada: Carbide Chemicals Sales Company, Division of Union Carbide Canada Limited, Toronto.



HERE'S WHAT TO LOOK

COMPARATIVE LATEX PROPERTIES

Property	Gen-Flo Latex	Latex A	Latex B	Latex C	Latex D
Viscosity—cps.	21	21	18	77	14
Residual Styrene %	0.03	0.02	0.22	0.07	0.05
Odor	Very Mild	Very Mild	Ammonia	Sour Sweet	Mild
Mechanical Stability %	0.03	0.02	0.03	Creamed- Thickened	Custard Consistency
Film Specs	Good	Good	Poor	Fair	Excellent
Stabilization System	Balanced	Balanced	Over Stabilized	Over Stabilized	Under Stabilized

NON-MODIFIED PAINTS

Tests					Control Paint
<u>Freeze-Thaw Stability</u>					
Original—cps	880	360	580	580	1120
After 1st cycle	780	360	600	780	coag.
After 2nd cycle	740	350	580	720	—
After 3rd cycle	700	340	560	660	—
After 4th cycle	850	370	620	900	—
After 5th cycle	900	360	740	1260	—
<u>Scrubs to Failure</u>					
24 hour dry	2000+	2000+	393	2000+	2000+
48 hour dry	2000+	2000+	2000+	2000+	2000+
<u>Cleansability</u> (strokes to remove)					
Crayon	41	47	100+	93	34
Ink	20	20	8	4	16
Lipstick	100+	100+	31	34	100+
Mercurochrome	100+	100+	15	100+	100+
Pencil	100+	100+	100+	100+	100+

16 hours at -20° F. 8 hours at 77° F.

Fed. Spec. TT-P-0029 with standard brush

Fed. Spec. TT-P-0029 with standard brush, except Bon Ami instead of soap solution

OIL MODIFIED PAINTS

Freeze-Thaw Stability					
Original—cps	2050	1490	1180	930	2490
After 1st cycle	2230	1500	1700	1610	coag.
After 2nd cycle	2170	1590	2280	3090	—
After 3rd cycle	2100	1880	2650	4870	—
After 4th cycle	2260	1810	3580	6680	—
After 5th cycle	2450	1790	5310	coag.	—
<u>Scrubs to Failure</u>					
48 hour dry	219	138	87	90	267
96 hour dry	1000+	1000+	240	186	1000+
<u>Cleansability</u> (strokes to remove)					
Crayon	35	24	37	18	19
Ink	10	7	31	5	18
Lipstick	54	46	73	36	33
Mercurochrome	100+	100+	80	47	100+
Pencil	59	83	85	25	27

Fed. Spec. TT-P-0029 with standard brush

Fed. Spec. TT-P-0029 with standard brush, except Bon Ami instead of soap solution

GENERAL TIRE

FOR IN . . .

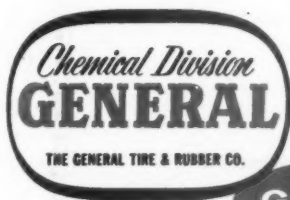
Paint Latex

You just can't buy a better paint latex than Gen-Flo*. When tested against samples of the top four competing latices, Gen-Flo emerged as the best balanced latex—either equal to or better than other products in all the vital requirements.

Gen-Flo is being produced in volume. Its growing acceptance among leading paint manufacturers is proof of its quality and performance.

Write for a sample of Gen-Flo and prove with your own formulation its superiority in freeze-thaw, cleansability, scrubbability, mechanical stability and other qualities essential to good latex paint.

For sample and reference data on Gen-Flo write to The General Tire & Rubber Company, Chemical Division, Akron, Ohio.



Creating Progress Through Chemistry

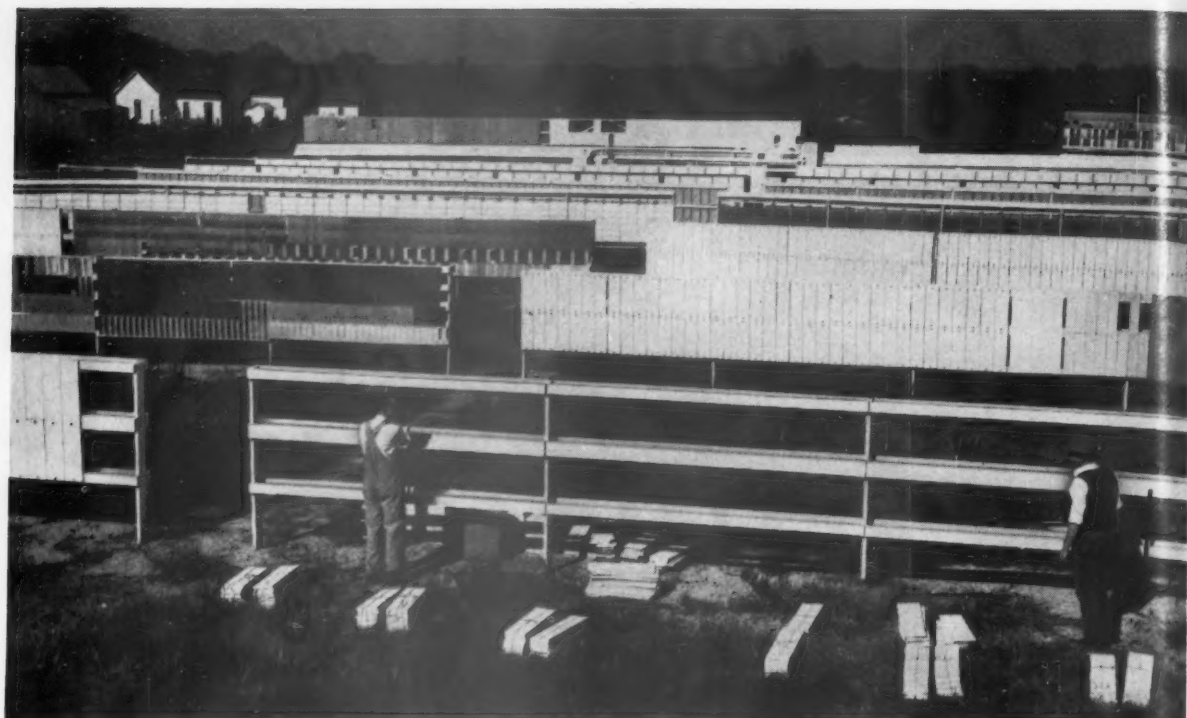
GEN-FLO

*T. M. G. T. & R. Co.

General Tire also produces . . .

Vygen* (Polyvinyl Chloride) • Gen-Tac* (Vinyl Pyridine Latex) • Ko-Blend®
(Insoluble Sulfur Masterbatch) • Hystron* (High Styrene Resin) Polystop® (GRS
Shortstop) • Glykon* (Polyester Resin) • Kure-Blend® (Masterbatch Accelerator)





ONE OF EAGLE-PICHER'S LARGER PAINT TEST FENCES—JOPLIN, MO.

IT TAKES MORE THAN PAINT TEST FENCES . . . to assure you unbiased counsel on the use of zinc and lead pigments

Here are three major reasons why you can rely on Eagle-Picher for unbiased and continuous customer service:

- 1 **THE LARGEST PRODUCER** of both zinc and lead pigments, Eagle-Picher's vast facilities encompass mining, smelting and manufacturing.
- 2 **WITH A COMPLETE LINE** of both zinc and lead pigments, Eagle-Picher can meet any paint requirement, no matter how exacting.
- 3 **MAINTAINING RIGID QUALITY CONTROL** from the ore to the finished product, Eagle-Picher's thorough physical and chemical analyses pay off in uniformity and peak performance of pigments. All pigments are exhaustively tested for weathering qualities, oil absorption, tinting strength, covering power, color, brightness, and decorative value.



Since 1843

THE EAGLE-PICHER COMPANY

Largest Producer of Both Zinc and Lead Pigments

General Offices: Cincinnati 1, Ohio

Regional Sales Offices: Chicago, Cleveland, Dallas, New York, Philadelphia, Pittsburgh

NEWS

Samuel Mairs, 75, Board Chairman At Archer-Daniels-Midland Dies

Samuel Mairs, 75, chairman of the board of directors at Archer-Daniels-Midland Co., died recently at Jamaica Inn, Ocho Rios, Jamaica.

He joined the firm in 1903 when it was in its first year and known as the Daniels Linseed Co. The entire office staff was composed of Mr. Archer, Mr. Daniels and one stenographer. Mr. Mairs joined the staff as a bookkeeper. He rose steadily and, at the time of his death, held the distinction of having been employed with the company or one of its predecessors longer than any other person.



Samuel Mairs

Transfer Market for Hystrene

Fatty Acids from Atlas to HumKo

The marketing of Hystrene fatty acids has been transferred from Atlas Powder Co. to The HumKo Co. of Memphis, Tenn., it was jointly announced by W. Clayton Lytle, general manager of Atlas' Chemicals Dept. and W. J. O'Connell, vice president of HumKo.

Atlas for the past five years has been sole sales agent for the Hystrene line, which is manufactured by HumKo's Trendex Div.

Simultaneously, it was announced that George W. Collins, in charge of Hystrene sales at Atlas, has joined the HumKo staff to head their fatty acid sales program.

He had been with Atlas since 1947, serving in the Chemicals Dept. sales division and later as product manager in charge of Hystrene sales program.

L.A. Miller Co. Appointed Kentucky Representative for Davies Can Co.

The Davies Can Co., Cleveland, Ohio, has announced the appointment of The L. A. Miller Co., Louisville, Ky., as representative in the Louisville area as well as the state of Kentucky.

Leo A. Miller, is a past secretary of The Louisville Paint & Varnish Association and has been in the Louisville area as a manufacturers agent for over eight years.



William M. Stuart, left, president of the Martin-Senour paint company, Chicago, congratulates Stanley A. Motalo upon his initiation into the company's 25-year club.

Report Self-Cleaning, Easy-to-See Pavement Paint Containing Sulfur

A new, self-cleaning, easy-to-see pavement paint for long-lasting highway safety is reported by Dr. C. Kinney Hancock of the Agricultural and Mechanical College of Texas in the current issue of the American Chemical Society's monthly *Industrial and Engineering Chemistry*.

The yellow striping material is made with sulfur and is soft enough so that traffic and weather wear away the surface and keep the color bright, according to the report. Night visibility is improved by the addition of tiny glass beads. The new composition dries quickly, wears slowly, and is equally effective on concrete and asphalt pavements, according to Dr. Hancock, who is professor of organic chemistry.

Chemists at the engineering experiment station of Texas A.&M. developed and tested the highway marking compound to provide a suitable substance for making a yellow dash stripe next to the white highway center stripe to indicate no-passing zones. The Texas Highway Department already has a serviceable white striping material, made by laying a band of hot asphalt, then applying finely crushed limestone which is ce-

mented in place when the asphalt cools. The white stripes are said to be long-wearing and self-cleaning. Research was directed toward the development of a yellow stripe with similar properties.

Sulfur is naturally yellow, cheap and inert. A satisfactory striping mixture was prepared from sulfur, Thiokol Type A (a synthetic rubbery substance for toughness and durability), glass beads, Hansa Yellow pigment and a bactericide to prevent microbe attack on the sulfur, according to the article. Test stripes were laid with the mixture (heated to about 270°F.) and they were ready to receive traffic within five to 15 minutes, the author reports, adding:

"These stripes suffered considerable traffic discoloration during the first few days after laying, but thereafter the color progressively improved from weathering and traffic abrasion until it was as good as (in some cases better than) the original color."

While the new molten sulfur compositions seem very promising, there is the problem of uniform heating for application, Dr. Hancock said, suggesting that further research should be conducted on cold-mix plastic sulfur formulations.

Distributor for Rocky Mt. Area Named by Hercules Powder Co.

Hercules Powder Co. has announced the appointment of the Denver Fire Clay Co. of Denver, Colorado, as its new distributor in the Rocky Mountain area for products of its Naval Stores Department.

The new distributor will have stock points at Denver and Salt Lake City. Pine oil, turpentine, and rosin are the principal naval stores products.

Role of Chemist in Protective Coatings Heard at Brooklyn College

"The Chemist in the Protective Coating Industry" was discussed by Morris Coffino, chief chemist of the D. H. Litter Co., at a meeting of the Chemistry Society of Brooklyn College, on January 5th.

He described the industry and the raw materials it uses as well as the increasing importance of the chemist. About 60 students attended the lecture.



NEW MATERIALS & EQUIPMENT

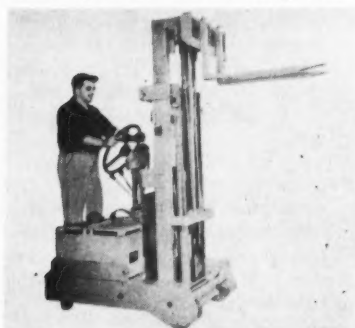
A MONTHLY MARKET SURVEY

This section is intended to keep our readers informed of new materials and equipment. While every effort is made to include only reputable products, their presence here does not constitute an official endorsement.

FORK TRUCK

Stand-Up Type

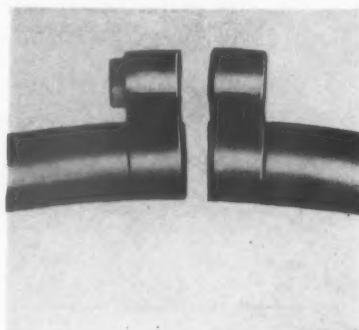
A new "Stand-Up Fork Truck" with all the function of the "Load-Mobile Sit-Down" type is said to allow the use of two batteries placed on either side of the operator without sacrificing mobility and with an increase in performance. A simple foot switch with two speeds forward and two speeds reverse and equipped with a dead-man brake, gives one-foot control operation and automatic braking when the unit is unattended. Forward and reverse are controlled by a direction switch which is hand operated and mounted conveniently near the steering wheel.



MARKET FORGE

The storage batteries, either 12 volt units connected in parallel for independent or simultaneous use, or 6 volt units connected in series provide up to 800 amp. hrs. capacity. Measuring 31 inches or 42 inches in width and 58 3/4 inches in length, not including forks, and with a turning radius of 52 inches, the truck is claimed to provide an all-purpose tool for handling materials and the performance of maintenance, etc.

Full information may be obtained by writing Materials Handling Div., Market Forge Co., 35 Garvey St., Everett 49, Mass.



DRUM PARTS

WELD NUT RINGS

Bolted Type

The "Weld Nut Ring" is said to be a simple, bolted type with a specially designed nut welded to the end of the lug. A tapered hole in the end of the nut leads the bolt into the nut and prevents cross threading. As a result, the company claims, this ring can be put on in the quickest possible time and the bolt driven home with a power tool. Further advantages, according to the company are a drum parts closing tool which expedites the operation; and greater strength and safety to the assembly since the welded nut prevents lug distortion. Further information may be had by writing to Drum Parts, Inc., 10311 Meech Ave., Cleveland 5, Ohio.

COUMARONE-INDENE RESIN

Improves Freeze Stability

"Neville R-7" is a special low odor and light color coumarone-indene resin. Company claims it has been used in making freeze stable, exterior white poly vinyl acetate emulsion paints. Features also reported for this resin include: freeze-thaw stability without increasing the odor of the paint; improved adhesion, particularly to old paint; retention of good outdoor aging. Neville Chemical Co., Pittsburgh 25, Pa.

STOP-WATCH HOLDER

To Prevent Damage

The "Guardman," a holder designed to prevent damage to costly stop-watches used in science and industry, is claimed not to interfere in any way with operating the watch when it is held in the hand. The support also has a rubber cushioning ring to safeguard the watch if it is dropped accidentally. To resist corrosion the support is



ANDREW

finished in Hammerloid. Stop watch illustrated is precision grade seven jewel timer, with sweep hand traversing the dial in 60 seconds, each second divided into 1/5 seconds. The small dial records up to 30 minutes. A "time-out" control button permits stopping the watch to take a reading and proceed from that point without returning to zero, if desirable. Andrew Technical Supply Co., 6972 N. Clark St., Chicago 26, Ill.

EMULSIFIABLE POLYETHYLENE Pilot Plant Quantities

Emulsifiable type A-C Polyethylene is now available in limited quantities for evaluation on plant run scale. It is reported that small particle size, stable, clear, high-solids-content emulsions are readily obtained with this easily emulsified material. Company claims that manufacturers of liquid pol-



all over America
it's . . .



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for Paint & Varnish Oils

see your local
PVO representative
for information



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3135 East 26th Street
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- 2 BALTIMORE, MARYLAND
W. R. McClayton & Co.
- 3 CHICAGO, ILLINOIS
Daniel G. Herely Co.
- 4 CLEVELAND, OHIO
Donald McKay Smith Co.
- 5 DALLAS, TEXAS
W. W. Richerson
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- 7 HOUSTON, TEXAS
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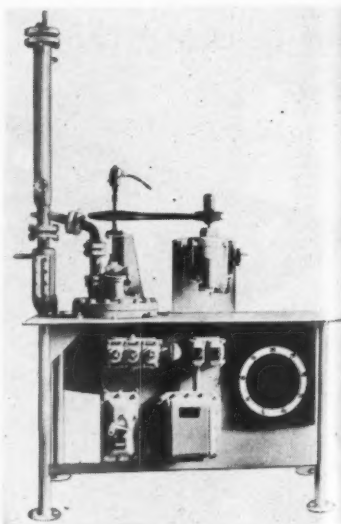
NEW MATERIALS — EQUIPMENT

ishes will find that its color and the competitive advantages of its stable price give emulsifiable type A-C Polyethylene a considerable edge over higher cost vegetable waxes whose price fluctuates. In addition, this material is controlled by narrow specifications. Possible applications include liquid coatings for glass, paper, boxboard, textiles, and leather. It also claimed to have great potential as an ingredient in floor and shoe polish formulations and other protective coatings. A complete list of prices effective January 1, and additional information may be obtained from Semet-Solvay Petrochemical Division, Allied Chemical & Dye Corporation, 40 Rector St., New York 6, N. Y.

PILOT PLANT

For Reaction-Distillation Studies

A new reaction-distillation pilot plant, Model No. 611, has been announced. It is made up of a 5-gallon reactor, agitator, condenser and decanter and can be used to test and study hundreds of



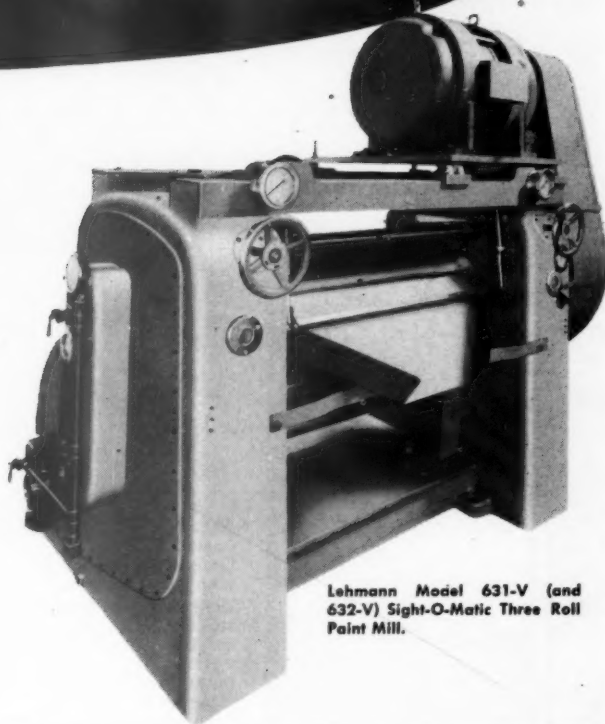
PATTERSON-KELLEY

chemical processing operations. Design features are said to include central gas-injection which eliminates the need for internal fittings. It is also used for inert gas blanketing of reactor contents; Flexible condensate flow arrangement; a specially-designed baffle in the

IF YOU NEED BETTER DISPERSION — take it up with LEHMANN



Lehmann Model 662-VF Three Roll Sight-O-Matic® Paint Mill. Also available with selective Float-O-Matic® feature.



Lehmann Model 631-V (and 632-V) Sight-O-Matic Three Roll Paint Mill.

Problems concerning dispersion in paint formulae are daily tasks for Lehmann. We are fully equipped and staffed to carry out research under practical operating conditions. By sending us samples for test, you can avoid the cost and delay of private research.

And we welcome these assignments because they help us to keep Lehmann paint mill design abreast of the needs of technological development in paint formulation. So send us your samples, state your problem, and we will undertake to find the answer for you—all without obligation. Be sure—use Lehmann test facilities.

Do any of your mills need factory reconditioning? Lehmann has cut mill out-of-service time by at least one-half by the recent addition of many modern machine tools and new techniques. Phone or write for details.

Send for descriptive bulletins of any or all machines shown here.

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J. M. LEHMANN COMPANY, Inc.

MAIN OFFICE AND FACTORY: 558 NEW YORK AVE., LYNDBURST, N. J.

NEW MATERIALS — EQUIPMENT

condenser neck diverts the flow of condensate away from the vapor inlet into the decanter. Decanted liquid can overflow into reactor or all of condensate can be returned to reactor by closing valve; Additional connections in top head provided to permit modified piping arrangements or installation of other auxiliary equipment.

The reactor is claimed to be equipped with a 1" flush-bottom valve with Teflon seat, and 3" quick-opening charge-connection port. The design conforms with

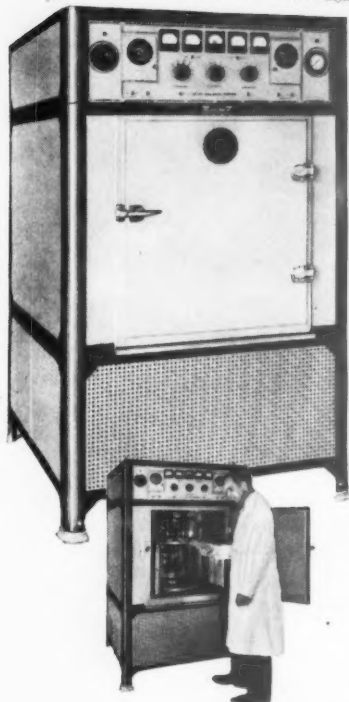
ASME code requirements for unfired pressure vessels. Surfaces in contact with reacting materials are of stainless steel. The small turbine agitator in the reactor is driven by a 1/3 hp single-phase explosion-proof motor. Speeds of this unit may be varied from 227 to 650 rpm.

The recording temperature controller uses air for control. Thermocouple-actuated, this 10" chart-type single-pen instrument is furnished with an air filter and an air pressure regulator, according to the company. For additional information, contact Patterson-Kelley Co., East Stroudsburg, Pa.

MECHANICAL SEAL Interchangeable Type

A new line of Chempro "wedge-lock," external mechanical seals which can be installed in 30 minutes, are claimed to be the first mechanical seals designed for complete interchangeability with stuffing-box packing in pumps, agitators, autoclaves and other rotating processing equipment. These seals are said to require no special holding clamps, no machining of stuffing-box faces to assure alignment. Company says that the seals give highly successful and economical service on equipment handling solvents, acids, caustics and other chemical liquids and slurries under

A NEW Weather-Ometer® ... for Weather Testing Paint Products MODEL DMC



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A constant volume of air at a controlled temperature in the heavily insulated cabinet, maintains uniform predetermined specimen temperatures regardless of variations in room conditions.

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All automatic controls including complete voltage controls are located on the front panel of the Weather-Ometer directly above the door of the test chamber.

Both horizontal and vertical testing is available. Shallow containers are used for semi-liquid materials and vertical panels for solid materials.

Source of radiation is two Atlas enclosed violet carbon arcs.

Complete technical information on the DMC model and other Weather-Ometers is contained in the new Weather-Ometer catalog. A copy will be mailed on request.

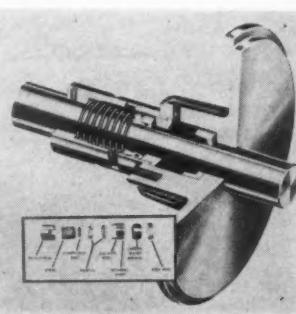
ATLAS ELECTRIC DEVICES CO. • 4114 N. Ravenswood Ave., Chicago



WEATHER-OMETERS

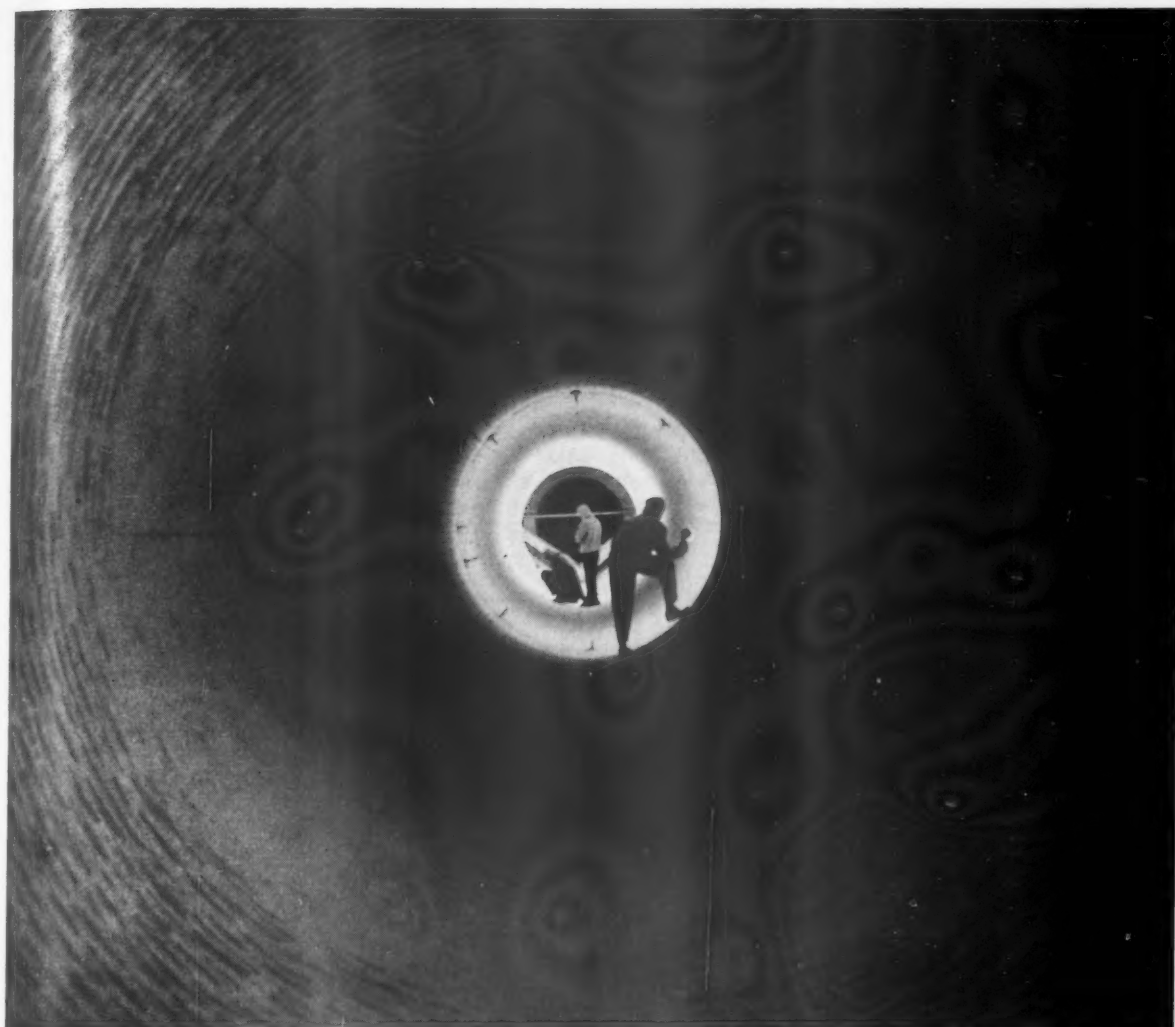
FADE-OMETERS

LAUNDER-OMETERS



CHEMICAL & POWER

a wide range of operating conditions and have been successfully used under slurry conditions that previously could not be sealed by a mechanical seal. The company further claims that perfect sealing is assured, with the possibility of spray leakage eliminated, since the sealing faces are located inside the stuffing-box. The hazards in handling corrosive, toxic, explosive and flammable liquids is reduced. The seal eliminates shaft scoring, and operates with a minimum friction load on the shaft, resulting in low power cost and exceptionally long operating life. The seal consists of only 8 parts, involving no complicated pieces. Installation and servicing can be handled in the field by maintenance crew. Style WLC, illustrated, is used in the majority of all chemical pump applications for suction pressures up to 35 p.s.i. and temperatures up to 500° F. A Chempro internal seal is required for higher suction pressures. Chemical and Power Products, Inc., 11 Broadway, New York 4, N. Y.



bull's-eye for quality

This huge calciner represents just one step in the TITANOX quality story. In this mammoth rotary kiln, titanium hydrate is converted to titanium dioxide. Here are developed, through careful heat treatment, the unique optical properties of TITANOX pigments—unsurpassed whitening, brightening and opacifying power.

Subsequent operations add to these optical properties such desirable qualities as ease of dispersion and freedom from coarse particles.

From the full lines of "pure" and composite TITANOX white pigments, you can select one or a combination to fit any of your pigmentation needs. Your TITANOX representative and our Technical Service Department are always ready

to help you make the right choice. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

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Subsidiary of NATIONAL LEAD COMPANY

**NEW
MATERIALS—EQUIPMENT**

THERMOREGULATOR

For Use in Viscosity Baths

A mercurial thermoregulator for precise control of temperature circuits in viscosity baths and similar operation has been announced. The instrument, called the Magna-Set, is claimed, under favorable conditions, to control temperature baths to within $\pm 0.002^\circ\text{C}$. The manufacturer claims that two design features are responsible for the performance of the instrument: an improved reservoir for displaced mercury, used when mak-

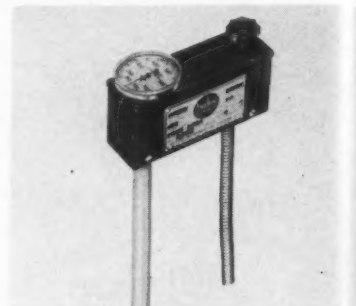
ing rough or preliminary adjustments; and a variable electrode with a magnetically controlled micrometer for fine adjustments. For further information write Precision Thermometer & Instrument Co., 1434 Brandywine St., Philadelphia 30, Pa.

TEMPERATURE CONTROL

For Lab and Industrial Use

The Model LD-1S is said to be an entirely new idea in temperature control indicating instruments. Designed for both laboratory and industrial use, it combines an independent dial thermometer with a differential expansion type temperature control.

Several adjustable temperature ranges are offered, including 150-750°F. Control is obtained by the differential expansion of two concentric tubes actuating a snap-acting switch through a lever.



BURLING

Switch is rated at 15 amp, 125-250 volts, a.c. Operating differentials are from ± 1 to 4°F , depending on conditions.

This control is for local mounting and may be furnished with flange or threaded fittings. Tube is of brass or stainless steel, 5/8" O.D. x 14" long. Instrument head measures 5" x 1 3/4" x 2 1/2", exclusive of knob and thermometer dial.

For further information, write Burling Instrument Co., 16 River Rd., Chatham, N. J.

LIQUID HEATER

With Forced Recirculation

International-LaMont thermal liquid heaters, incorporating the LaMont principle of forced recirculation, are said to provide process system temperatures to 750°F with close tolerances of plus or minus 2° . By maintaining fluid velocities of 5' to 8' per second within the tubular heating surfaces of the heater, maximum heat absorption and operating economy is claimed to be obtained. Company says this also eliminates the normally critical factor of fluid decomposition from overheating, with subsequent severe damage being done to the heater itself. These completely packaged heaters have found acceptance within the paint, varnish, resins, fatty acid, chemical, and other industries where process temperatures to 750°F are used daily.

Further information may be had by writing to The International Boiler Works Co., 237 Elm St., East Stroudsburg, Pa.



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make rich enamel
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shades range from light red to maroon.

These are just a few of the reasons why REICHARD-COULSTON IROX Reds and other iron oxides are so widely used. Learn what REICHARD-COULSTON reds, yellows, umbers, siennas, and metallic browns can do for your production. For free laboratory samples and technical data, write today.



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PATENTS

Conducted by
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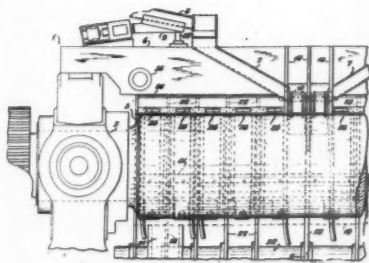
PATENTS AND COPYRIGHTS

424 Bowen Building,
Washington, D. C.

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired (to foreign countries \$1.00 per copy) to Lancaster, Allwine & Rommel.

Mixing Mill

U. S. Patent 2,696,635. James Rehak, Cicero, Ill., and Clifford R. Wallace, Paris, and Rex C. Seanor, Akron, Ohio, assignors to Adamson-United Company, Akron, Ohio, a corporation of Ohio.



U. S. Patent No. 2,696,635

Apparatus for mixing rubber or other plastic material and including a base, a smooth mill roll journaled on said base, a helically grooved roll journaled on said base and forming a bight with the said smooth roll, and a plate-like casement of arcuate contour surrounding the grooved roll, said casement having a plurality of bores extending therethrough in the direction of the arc therein, edge portions of said casement narrower than the casement edge being removed to connect ends of adjacent bores, and cover plates secured to said casement over the removed edge portions of same to seal over the connections between adjacent bores and form a connection therebetween.

Fungicide

U. S. Patent 2,697,094. Friedrich Becke, Bad Duerkheim, and Oskar Flieg, Limburgerhof (Pfalz), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhein, Germany.

2,6 dinitro-4,5-dichlorophenyl ethers of cellulose.

Modified Melamine-Formaldehyde Resin

U. S. Patent 2,697,086. Richard Lindensfelder, Darien, and Martha K. Kilthau, Cos Cob, Conn., assignors to American Cyanamid Company, New York, N. Y., a corporation of Maine.

A process for producing a resinous composition, suitable for use in preparing laminate surfaces, comprising heating melamine, formaldehyde and a polyvinyl butyral at a pH between about 7-10.5 and at a temperature between about 75° C. and reflux in an alcohol aqueous medium until the reaction solution no longer crystallizes upon cooling to 0° C., wherein the mol ratio of the melamine to formaldehyde is between 1:1.5 and 1:4.5, respectively, wherein said polyvinyl butyral has a hydroxyl number between about 400

and 800 and said polyvinyl butyral is present in the composition in an amount varying between about 20%-40% by weight based on the total weight of resin solids wherein said alcohol is a lower saturated monohydric aliphatic alcohol having 1-4 carbon atoms and said aqueous alcohol solution has a concentration of alcohol between about 40-80% by weight based on the total weight of alcohol aqueous solution.

Cellulose Acetate Composition

U. S. Patent 2,697,046. John D. Brandner, Wilmington, Del., assignor to Atlas Powder Company, Wilmington, Del., a corporation of Delaware.

As a composition of matter, cellulose acetate and a plasticizer therefor, said plasticizer comprising from 10% to 35% by weight of the sum of cellulose

IMPERIAL...Pioneers for 42 Years in Color Progress... Industry Leadership



IMPERIAL'S color plants are located in picturesque Glens Falls, Gateway to New York State's Adirondack Mountains, on the banks of the Hudson, where its sparkling mountain waters turn south for the 200 mile trip to New York City.

IMPERIAL is the world's largest producer of chemical pigment colors, a result of continuous research and development as well as expansion in plant and laboratory facilities. New types of colors and improvements in conventional products, coupled with technical skills applied to research, product control, and customer service have been responsible for an ever increasing demand for Imperial colors.

Pigment Color
Division

One of these Imperial offices is probably a neighbor of yours...

acetate and plasticizer, wherein at least half of said plasticizer is a mono-phenyl ether of a polyethylene glycol containing from 4 to 6 oxyethylene groups and the balance is another solvent plasticizer for cellulose acetate, and wherein the said ether constitutes not more than 25% of the said sum.

Epoxide Esters

U. S. Patent 2,698,308. Samuel B. Creelius, Washington, D. C., assignor to Devoe & Reynolds Company, Inc., Louisville, Ky., a corporation of New York.

The process of producing organic carboxylic acid esters of resinous epoxide alcohols which comprises heating to an alcoholysis temperature resinous epoxide alcohols which are polyether derivatives of dihydric phenols having

alternating aliphatic groups and aromatic nuclei united through ether oxygen, including intermediate alcoholic hydroxyl-containing and terminal epoxide-containing aliphatic groups, with organic carboxylic acid esters of readily volatile monohydric alcohols under a high vacuum with volatilization and removal of the monohydric alcohol in the presence of a small amount of an alkaline alcoholysis catalyst, whereby selective esterification is effected of hydroxyl groups of the resinous epoxy alcohol to produce esters containing epoxide groups.

Resinous Compositions

U. S. Patent 2,698,250. William G. Lechner, Fort Wayne, Ind.

A composition for use as a nonslip coating consisting of chiefly wood rosin

and hydroabietyl alcohol, the mixture being dissolved in organic solvent and wherein said rosin comprises at least about 50% by weight of the wood rosin-hydroabietyl alcohol constituent, the proportionate amount by weight of rosin to hydroabietyl alcohol varying from about 1:1 to 5:1 respectively.

Metal Treating Material

U. S. Patent 2,698,266. James H. Thirsk, Wyncote, Pa., assignor to American Chemical Paint Company, Ambler, Pa., a corporation of Delaware.

An aqueous metal treating bath consisting of water, chromic acid, and cerium nitrate, said chromic acid being present in an amount of from 0.04 to 12 grams per liter and the cerium nitrate being present in an amount of from 0.02 to 6 grams per liter.

Epoxide Resins

U. S. Patent 2,698,315. Sylvan Owen Greenlee, Racine, Wis., assignor to Devoe & Reynolds Company, Inc., Louisville, Ky., a corporation of New York.

The process of producing complex epoxide resins which consists essentially of reacting diphenol with an excess of a chlorhydrin selected from the class which consists of epichlorhydrin and glycerol dichlorhydrin, the proportions of chlorhydrin to diphenol being in excess of 1:1 and not more than about 2:1, in the presence of caustic alkali, and continuing the reaction to produce a solid water-insoluble resinous product.

Metallic AZO Pigments

U. S. Patent 2,694,055. Thomas E. Ludwig and Oswald E. Knapp, Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio, a corporation of Ohio.

A light and heat stable red to maroon pigmentary substance consisting essentially of the water-insoluble metallic salts of the azo dyestuff formed upon diazotization of dichloraniline monosulfonic acid and coupling of said acid with 2-hydroxy-3-naphthoic acid.

LANCASTER, ALLWINE & ROMMEL REGISTERED PATENT ATTORNEYS

Suite 424, 815 — 15th St., N. W.
Washington 5, D. C.
Patent Practice before U. S. Patent Office. Validity and Infringements Investigations and Opinions.
Booklet and form "Evidence of Conception" forwarded upon request.

Chats about Finishes

TECHNICAL DATA AVAILABLE ON DRESINOL® RESIN IN WATER EMULSION PAINTS

By E. H. CONE, JR.
Sales Mgr., Industrial Chemicals
Hercules P.M.C. Department



Dresinol® resin dispersions, based on rosins and modified rosins, have been found useful in adhesive and coating applications. Increased moisture resistance and adhesion as well as cost reductions, have been achieved in such compositions based on aqueous systems of polymeric film formers.

The object of a recent research program at the Hercules Experiment Station was to determine the utility of such resin dispersions in water emulsion paints. These paints, largely because of ease of application and after clean-up, are becoming increasingly popular with professional and "do-it-yourself" painters.

In this work, Dresinol was substituted in varying percentages for polymer dispersions in formulations recommended by polymer manufacturers, without otherwise modifying the formulations to improve paint performance. Studies include: (1) butadiene-styrene paints; (2) paints based on polyacrylics and (3) primer-sealer paints based on butadiene-styrene latex.

Copies of the Technical Report have just been printed. Let us hear from you and we will be glad to send you a copy.

E. H. Cone, Jr.



P.M.C. Department
HERCULES POWDER COMPANY
INCORPORATED

926 Market St., Wilmington 99, Del.

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Waxes

New revised edition explains the properties and applications of key organic solvents in non-technical language. 64 pages packed with facts... includes definitions, comparison tables, testing methods and product descriptions. Pocket size for easy reference. Write today on your letterhead for your free copy.

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HOUSTON, Orchard 6683
INDIANAPOLIS, MEloose 8-1361
LOUISVILLE, ATwood 5828
MILWAUKEE, GRGreenfield 6-2630
NEW ORLEANS, Temple 4666
ST. LOUIS, GARfield 3495
TOLEDO, Jorden 0761
WINDSOR, Ontario 4-4378

"HYPALON—"

(From page 29)

inch, were immersed in acid and alkaline solutions. The results of this immersion test indicated that coatings of "Hypalon" were unaffected by 30 per cent chromic acid, 85 per cent phosphoric acid, 50 per cent sulfuric acid, 20 per cent sodium hypochlorite, 50 per cent sodium hydroxide, and sea water. A similar coating, when immersed in 37 per cent hydrochloric acid, was penetrated by the acid after a two-week period, resulting in a lifting of the coating of "Hypalon."

Fabric Coatings

Coatings of "Hypalon" on cotton fabric have maintained their flexibility, toughness, adhesion to the fabric, and attractive appearance after three years' exposure in Florida. Coatings of this type are outstanding candidates wherever rugged service is required, such as in upholstery fabric, heavy duty gloves, tarpaulins, and industrial diaphragms. Coatings of "Hypalon" have been applied experimentally to cotton duck, rayon, nylon, glass fiber, "Orlon" acrylic fiber, and "Dacron" polyester fiber. Commercial applications include upholstery-type coatings on cotton duck, the waterproofing of awning fabric made from "Orlon," and

the coating of "Fortisan" rayon for lamination and subsequent testing of air-supported structures outdoors.

Since "Hypalon" chlorosulfonated polyethylene is a chlorine-containing elastomer, it is possible that hydrogen chloride may be formed when compositions, especially thin films, are exposed to high temperatures. For high-temperature service, a large amount of metal oxide is recommended. The high metal oxide loading accepts the acid and minimizes fabric tendering.

Decorative and protective coatings of "Hypalon" may also be applied to other surfaces such as wood, plaster, ceramics, concrete, painted metal, and polyester glass laminates.

Coatings based on chlorosulfonated polyethylene are characterized by their extreme flexibility, excellent color stability and resistance to attack by ozone, chemicals and weather. This combination of properties, which is unique in the coating field, makes the new elastomer worthy of consideration as a vehicle for protective coatings where present materials are found inadequate.

Speaking of... SERVICE



Heyden offers paint and resin manufacturers a complete, efficient and friendly service in...

PENTEK®

Pentaerythritol, Technical

MONOPENTEK® • DIPENTEK® • TRIPENTEK®

...we manufacture ALL of the pentaerythritols.

When you order Pentek®, you are buying the polyol which has long served as the standard for top performance in the resin and paint fields. First to produce a high quality pentaerythritol in commercial quantities, Heyden has acquired extensive production experience through years of meeting the rigid requirements of paint and varnish manufacturers.

An important part of Heyden service is the continuing research conducted by our Applications Laboratory on pentaerythritol uses. These studies have resulted in constant product improvement and a better understanding of customer needs. Our technical staff invites consultation on your polyol problems.

Fast delivery of these pentaerythritols is another important part of Heyden service. This is a result of the cooperation between a fast-moving traffic department and field sales offices and warehouses strategically located in the paint and varnish centers of the United States.

Pentek®, Monopentek®, Dipentek® and Tripentek® are shipped in 50 lb. multiwall paper bags. Samples and technical information available on request.



HEYDEN CHEMICAL CORPORATION

342 Madison Avenue, New York 17, N. Y.

CHICAGO • CINCINNATI • DETROIT • PHILADELPHIA • PROVIDENCE • SAN FRANCISCO

Push-Button Aerosol Products Favored According to Survey

More than half the buyers of paints and lacquers, insecticides, and room deodorants, when given a choice between an aerosol and a non-pressurized package of the same product type, choose the push-button aerosol, a new Du Pont survey of 1,983 retail outlets reveals.

This report was presented to the Chemical Specialties Manufacturers' Association at its 41st annual meeting in New York by Du Pont's "Kinetic" Chemicals Div. in a report of its eighth annual survey of the aerosol market.

Insecticides are the most commonly stocked aerosol product in all types of retail outlets, with room deodorants and mothproofers a close second, according to the survey. The majority of drug, department, grocery and variety stores stocked both household and personal toiletry items in aerosol containers, while hardware stores and service stations limited their aerosol stocks almost entirely to household aids, such as paints and lacquers, plastic sprays, insecticides, room deodorants, mothproofers, and fire extinguishers.

TO FORMULATE FASTER and BETTER with lead-free ZINC OXIDES...

Choose the **PARTICLE SHAPE** you need
from the *Horse Head family*



You formulate *faster* with Horse Head oxides . . . because you can select from the most complete variety of particle shapes and other characteristics.

Thus you save the time it takes to build a formula around a single grade of zinc oxide.

You formulate *better* with Horse Head oxides . . . because you can develop paints with special properties.

XX-503, for example, is favored for use in fume-proof and one-coat house paints, because it combines excellent durability with low consistency.

XX-503, like many other grades of oxides, is available only in the Horse Head family.

THE NEW JERSEY ZINC COMPANY

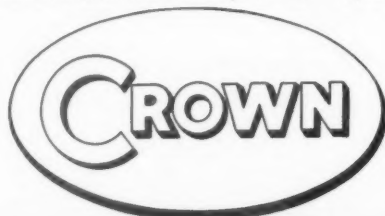
Producers of Horse Head Zinc Pigments . . .
most used by paint manufacturers since 1860

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Crown "F" Styles give you Quality—excellent construction for utmost product-protection; Performance—Crown lithography is superior all-ways... sells your product wherever it's displayed; Variety—a complete range of sizes from quarter-pints to gallons; your choice of closures. Think it over—talk it over—look 'em over... then decide: shouldn't Crown be one of your "F" style suppliers?



CROWN CORK & SEAL COMPANY, INC.
CROWN CAN DIVISION

One of America's Largest Can Manufacturers

PHILADELPHIA • CHICAGO • ORLANDO • BALTIMORE • NEW YORK • BOSTON • ST. LOUIS • SAN FRANCISCO

Personnel

Changes

VALSPAR

Arthur R. Cannon has been elected chairman of the board. He is president of Oliver B. Cannon & Sons, Inc.,



Cannon



Hartnett



Keegan



Barberi



Robertson



MacDonald

Philadelphia, painting contractors. L. B. Hartnett has been elected president of the corporation. He was formerly eastern regional sales manager of Certain-teed Products Corp. Wilbur V. Keegan has been elected vice president in charge of research and manufacturing. A. P. Barberi is director of merchandising and will be responsible for the development and coordination of the company's merchandising, advertising, sales promotion and public relations program. James W. Robertson has been appointed advertising and sales promotion manager; Paul MacDonald, vice president and general sales manager, will be responsible for the new sales program; R. H. Mullen is trade sales manager, and P. L. Shea is secretary. A majority of Valspar's capital stock was acquired some month ago by Certain-teed Products Corp. These appointments are part of program aimed at creating a "new look" for Valspar.

NATIONAL GYPSUM

Fred A. Manske has been elected to the newly created position of executive vice president. He will be in charge of the company's production, operations and sales. Wells F. Anderson was elected vice president in charge of operations and manufacturing, the position formerly held by Manske. William M. North was elected vice president to assist the chairman of the board. Clifford F. Favrot, president of the Carondelet Realty Corp. of New Orleans, was elected a member of the board of directors. He succeeds William M. Currie, president of Currie Products, Ltd. of Hamilton, Ontario, who is retiring because of ill health. All elections and appointments were announced by Melvin H. Baker, chairman of the board.

SHIELD CHEMICAL

William E. Knappman has joined the company's technical staff, it was announced by Dr. E. A. Milost, technical director. He will be in charge of product development for industrial finishes and special protective coatings.

Before joining the company he was technical director of Standard Color & Chemical Co. Important posts he has held in his twenty-five years in the paint industry include technical director at United Lacquer Mfg. Co., chief chemist of the eastern division of Reichhold Chemical Co., basic research at General Chemical Co., research chemist at Valspar Co., and assistant plant superintendent with American Powder Co. He served four years as special consultant on organic coatings with the Quartermaster Corps.



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ELVACET*

POLYVINYL ACETATE EMULSIONS

...and Du Pont will help you with your formulations

You can make a variety of low-cost, durable paints with "Elvacet" polyvinyl acetate emulsions. Primer-sealer, interior and exterior masonry paints can all be formulated with "Elvacet", without special mixing equipment.

Your water-based paints, properly formulated with "Elvacet", will offer these sales advantages:

- Easy to apply
- Fast-drying
- Resist fading and yellowing

- High moisture-vapor transmission—(Paints can "breathe")
- Easy to clean
- Alkali-resistant

Your customers will like the way "Elvacet"-based paints are easily washed from brushes and hands when the job is done—no messy clean-up problem.

Get more information on "Elvacet" and its use in this growing paint field. Just fill out and mail the coupon below.

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ELVACET

Reg. U. S. Pat. Off.
polyvinyl acetate emulsions



Better Things for Better Living
... through Chemistry

E. I. du Pont de Nemours & Co. (Inc.) PVP-2
Electrochemicals Dept., Wilmington 98, Del

- ☐ Please send me more information on "Elvacet" for interior and masonry paints.
☐ Please have your representative call with suggested formulations.

Name _____ Position _____
Firm _____
Address _____
City _____ State _____

INTERCHEMICAL

Dr. Myles L. Mace, Professor of Business Administration at the Harvard Business School, has been elected to the board of directors to fill the place of the late Allen L. Billingsley. He has taught administrative policy since World War II and for the last four years has been associated with the Harvard Advanced Management Program for business executives. His book, "The Growth and Development of Executives" was published in 1950, and for the past several years he has been doing consulting work.



M. L.
Mace

AMERICAN CAN

G. W. Reese, general manager of manufacture, has been elected vice president in charge of the Atlantic Division, with headquarters in New York. He succeeds S. D. Arms, who has retired after 42 years of service. **R. C. Stolk**, manager of sales for the Pacific Division, has been elected vice president of that division, with headquarters in San Francisco. He succeeds C. W. Roberts who retired after 43 years with the company.

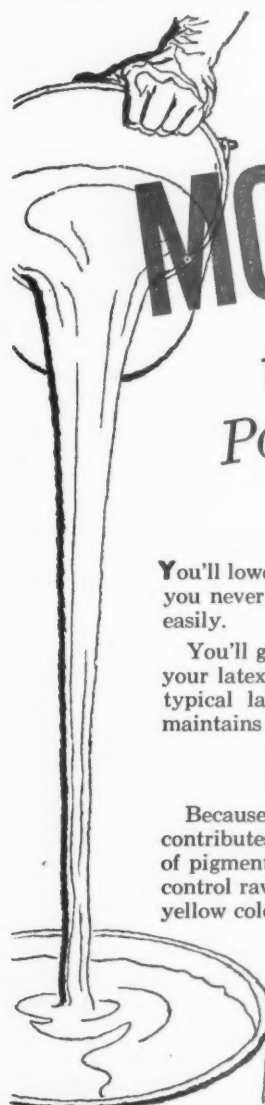
Dr. R. H. Lueck, formerly general manager in charge of the research and technical department, has been elected vice president in charge of the department, it was announced by William C. Stolk, president. The scientist, who has been with the company for 32 years, will continue to make his headquarters in New York.

TRUSCON LABS

Basil Howell, general production manager of Devoe & Reynolds Co., Inc., Louisville, Ky., has been named president of Truscon Laboratories, Detroit, according to William C. Dabney, president, Devoe & Reynolds, of which Truscon is a division. He succeeds **J. C. Knochel**, who has been elevated to the post of vice president of Devoe to assume over-all management responsibilities at the Louisville executive offices. **J. F. MacCallum**, formerly superintendent of the Jones-Dabney plant, has been promoted to the post of general production manager of Devoe.



Basil
Howell



MODICOL® VD

*the Latex
Paint Thickener
you can POUR!*

You'll lower production costs with Modicol VD, because you never have to "chop it off" when mixing—it pours easily.


You'll get more long-lasting and constant viscosity in your latex paints with Modicol VD. Tests show that a typical latex paint formulation, using Modicol VD, maintains its viscosity as follows:

INITIAL:	ONE DAY:	2 MONTHS:
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Because of its high molecular weight, Modicol VD contributes also to better brushability, aids suspension of pigments, and by insuring full water addition, helps control raw material cost. Another advantage is its pale yellow color.

You want all the facts on Modicol VD. Write today for Bulletin 36.

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Harrison, N. J.



PLANTS: Harrison, N. J. • Cedartown, Ga. • Richmond, Calif.

GLIDDEN

Ralph B. Quelos will become Eastern sales manager of the Chemical-Pigments-Metals Division with headquarters in Baltimore, and **James C. Rankin** will assume duties as Central sales manager with headquarters in St. Louis, according to J. P. Ruth, vice president and general manager of the division.

Mr. Quelos began his career with the company 21 years ago as a trainee at company headquarters in Cleveland. Shortly thereafter, he was transferred to Baltimore where he soon was appointed eastern sales manager of the firm's Chemical & Pigment Division. In 1946 he returned to Cleveland as general sales manager at the division's headquarters offices. Mr. Rankin has been with the company for 12 years. He started in the firm's paint division home offices in Cleveland, and has assumed a succession of managerial responsibilities, including manager of Glidden's former Feed Mill Division.

NEVILLE CHEMICAL

Donald R. Fitzgerald has been appointed sales representative in the Chicago and Milwaukee areas. He will serve customers in such important industries as paint and varnish, printing ink, floor tile, adhesives, and chewing gum, among others. Sales to the rubber industry will continue to be handled by E. P. Lambert Company of Akron, Ohio. Fitzgerald has been selling raw materials in this area since 1936. He established his own manufacturers' agency in 1948, handling a complete line of materials for the paint, varnish, and allied industries.

VULCAN PAILS

for the PAINT TRADE



Your Pail and Drum needs can be served quickly and easily from Vulcan Steel Container Co.'s modern plant located in the heart of the Industrial South.

- PROVEN QUALITY STEEL PAILS AND DRUMS in a FULL RANGE OF SIZES from 1 to 8 gallon—Open Head and Closed Head styles.
- Colorful, fine-quality LITHOGRAPHING to effectively reproduce your label.
- HI-BAKE INTERIOR LININGS proven-in-use for latex and water emulsion paints, and hard-to-hold chemicals, available in all sizes and styles.
- POURING SPOUTS and nozzle openings of all popular styles supplied on Vulcan Pails and Drums.
- LARGE STOCKS of all popular sizes and styles regularly carried in Plant and Field WAREHOUSES, for prompt shipment, or convenient pick-up by customers' trucks.
- FAST, DEPENDABLE, PERSONALIZED SERVICE is assured from this independent Southern plant.

Samples and prices gladly furnished.



Colorfully Lithographed Pails produce extra sales and keep your trade name prominently displayed.



Drum-Type Closed-Head containers, for Paint and Chemical products—all sizes and with all popular pour spouts.



Open-head Lug Cover Pails made in size 1 through 8 gallon

An Independent Southern Company Serving Southern Industry

Made In
"HEART
O'
DIXIE"

VULCAN STEEL CONTAINER CO.

33 N. 35th Ave.
BIRMINGHAM

Main Office and Factory

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ALABAMA

DIXON CRUCIBLE

H. E. Ehlers, Jr. has been promoted to the post of general sales manager, **R. C. Brock** to industrial sales manager and **D. C. McMillin** to district manager, Pacific Coast District, it has been announced by **E. M. Cabaniss**, president of the company.

Mr. Ehlers joined the organization in 1935 as a member of the Crucible & Refractories Div. and was appointed manager of in 1948. In 1952 he was named industrial sales manager, the position held until his promotion. Mr. Brock joined the company as an industrial sales representative in 1948 and has been district manager of the Pacific Coast District since 1951. Mr. McMillin started with the Dixon Pencil Products Div. as a sales repre-

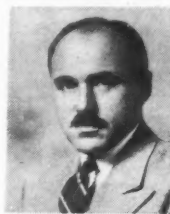
sentative in 1952. He will continue to make his headquarters in San Francisco.

CELANESE

Edward F. Swanezy and **M. Henry Jamison** have been promoted to new sales administrative positions within the Chemical Division. Mr. Swanezy, formerly sales representative in the New York metropolitan area, becomes sales manager of the Chicago District, succeeding **R. J. Werner** who has been transferred to New York headquarters to assume new and expanded duties. Mr. Jamison becomes sales manager for the newly established District sales office in St. Louis, Mo. Previously he had been assigned direction of the St. Louis area as a part of the Chicago District sales territory.

GREAT LAKES CARBON

Michel E. Puyans has been elected vice president finance, and **William O. Ashe** treasurer, it was announced by



M. Puyans



W. O. Ashe

the firm's board of directors. Mr. Puyans was formerly vice president and treasurer. He joined the company as treasurer in 1945 after 18 years with The New York Trust Company in various capacities. He was elected vice president in 1950.

Mr. Ashe, formerly assistant treasurer, became credit manager of the company in 1948, following several years with a national credit organization. He was elected assistant treasurer in 1950.

MINERALS & CHEMICALS

Robert W. Wilkerson has been appointed to the newly created position of advertising and sales promotion manager with headquarters in the home office in Metuchen, N. J. He was formerly an account executive and secretary of Kenyon-Baker Co., Inc. advertising agency in Newark. The job was created, according to A. G. Blake,



R. W. Wilkerson

executive vice president, because there has been an expansion of products and markets since the merger of Edgar Brothers Co. and Attapulugus Minerals & Chemicals into Minerals & Chemicals Corp. of America. Mr. Blake said a need was created for the coordination of advertising and sales promotion activities of all the various divisions of the new corporation.

BARRETT DIVISION

Edward M. Lemon has been appointed West Coast representative of chemical sales, with headquarters in Los Angeles. He joined the Division's sales staff in St. Louis in 1948 after several years experience in teaching and educational administration. **Josef E. Windbiel** will fill Mr. Lemon's position in St. Louis. He has been in sales training with the division since Feb. of last year.

That's all it costs to remove the odor from your paint with Maskit #2

- Makes your paint more acceptable to painters and home owners.
- Masks the odor in the can and while paint is being applied . . . as well as during — and after — the drying period.
- Does not affect drying time or color durability.
- Amazingly economical . . . use 1 lb. of Maskit #2 to 150 gallons of paint.

MASKIT #2 is equally effective in paints, lacquer thinners, varnishes and other similar types of products. Order a trial pound today!

AROMATIC PRODUCTS, INCORPORATED
 15 EAST 30th STREET, NEW YORK 16
 CHICAGO • DALLAS • MEMPHIS • PITTSBURGH • LOS ANGELES • BOSTON

ARMOUR

L. M. Miller has been appointed eastern regional sales manager for the Chemical Div., with headquarters in North Bergen, N.J. A chemistry graduate of Purdue University, he joined the company in 1951 as a technical salesman in the Market Development Dept. and became manager of the department the following year. He has worked

on development of tertiary amines and fatty acids, and projects relating to the textile and paper industries. **E. L. Rhoads, Jr.**, assistant manager of the Derivatives Dept., becomes manager of market development. **R. E. Eddy** assumes Mr. Rhoads' position in the Derivatives Dept.

NATIONAL DISTILLERS

Lee A. Keane, vice president of U. S. Industrial Chemicals Co., Division of National Distillers Products Corp., has been named director of chemical sales, and will be in charge of the sales of all the corporation's chemical products. **Robert H. Cornwell** has been appointed director of production, and will be responsible for the production activities of all the chemical plants of the corporation and its subsidiaries. **Dr. Stuart Schott** has been named director of research, and will be in charge of the research division which will conduct research and pilot plant operations for the entire corporation and its subsidiaries. The appointments highlight the integration of all the corporation's chemical activities into one division, as announced recently by Dr. Robert E. Hulse, director of the Chemical Division, and a vice president of both National Products Corp. and its subsidiary, National Petro-Chemicals Corp.

WITCO

Harry Hoehler has joined the company's New York sales staff. He will cover the Philadelphia and Baltimore sales areas. He has been recently active in the distribution of plastics and paper products and for many years he conducted his own chemical sales agency at Wayne, Pa.

BASIC VARNISH

Samuel Finkle has been elected president; **Louis Wasserstein**, vice president; and **Louis J. Roncoli**, secretary and treasurer. Mr. Wasserstein will be in charge of production, and Mr. Roncoli will be general manager in charge of purchasing, promotional advertising and finances.

AMERICAN CAN

C. F. Lausten, assistant general manager of manufacture, has been named general manager of that department, succeeding **G. W. Reese** who has been elected vice president in charge of the Atlantic Div.

H. R. Larsen has been made general manager of the general purchasing department. He had been assistant general manager. Messrs. Lausten and Larsen joined the company in 1928.

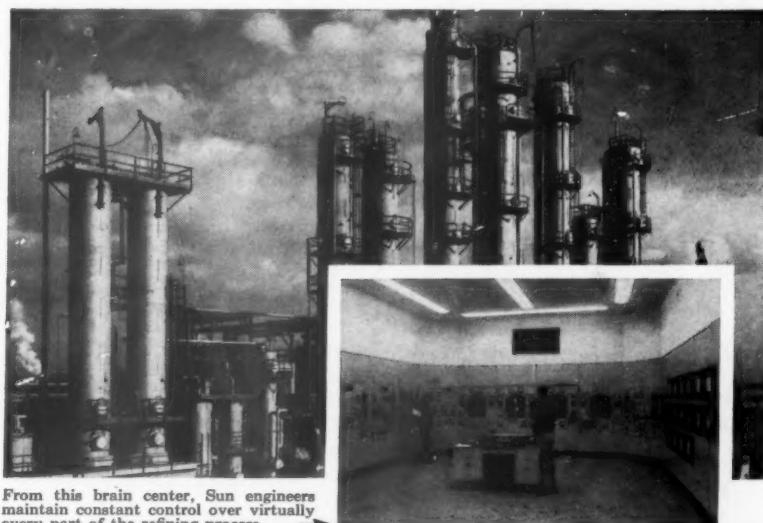
KOPPERS

Dr. M. G. Sturrock has been appointed a research associate and group leader of the Central Staff Research Dept., it was announced by **W. F. Munnikhuysen**, executive vice president. **W. E. Kemp** will succeed Dr. Sturrock as manager, Technical Dept., Tar Products Div.

INTERCHEMICAL

Werner F. Goepfert has been appointed personnel manager for the company's central research laboratories in New York City. He will concern himself with the employment of laboratory personnel and with employee relations. He will maintain contact with colleges graduating technical personnel, and also continue as

chairman of the corporation's scholarship committee. **William L. Scott** succeeds Mr. Goepfert as head of the raw materials group, with which he has worked during much of this time.



From this brain center, Sun engineers maintain constant control over virtually every part of the refining process.

SUN OIL'S NEW PLANT NOW OFFERS TOLUENE AND XYLENES OF CONSTANT UNIFORMITY

Used as solvents in enamels, varnishes and industrial finishes, these new, constantly uniform Sun aromatics help you hold your product to close specifications—even over long-run production.

Toluene and xylenes are among the important petrochemicals now being made as primary products—not by-products—at the new Sun Oil Co. plant in Marcus Hook, Pa. This is the largest plant on the East Coast extracting these aromatics from petroleum. Precision instrumentation, combined with the most modern available facilities, provides constant control of every step in the refining process to maintain new high standards of uniformity.

For complete information on these new paint and varnish solvents, write Dept. PV-2

INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY



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Refiners of famous High-Test Blue Sunoco Gasoline

GENERAL ELECTRIC

G. Stanley Berge has been named manager of marketing; K. O. William Sandberg was appointed manager of engineering, and Arthur T. Bourgault has become manager of the department's Taunton, Mass., custom molding plant, according to John L. McMurphy, general manager, Plastics Dept. Mr. Berge joined the company's test program in 1941 upon his graduation from Brooklyn Polytechnic Institute, where he earned a B.S. in Electrical Engineering.

Mr. Sandberg was graduated from Columbia University with an A.B. degree in 1939. He received his B.S. in Industrial Engineering from the same institution the following year. He also holds an M.Ad.E. degree from New York University, as well as a

doctorate in Engineering Science. Mr. Bourgault is a graduate of the Becker School of Accounting and Finance. He joined the company's Business Training Course in 1935.

Dr. Robert H. Krieble has been appointed manager of the chemical development department of the company's Chemical and Metallurgical Div., according to an announcement from Robert L. Gibson, Division general manager. He will succeed Dr. Alphonse Pechukas, who has been appointed to the post of consultant—materials and processes, Engineering Services Div. Dr. Pechukas' appointment was announced by Clarence H. Linder, vice president for engineering services. Dr. Krieble will make his headquarters in Pittsfield, Mass.

T. F. WASHBURN

Ralph T. FitzSimons, for the past two and one-half years assistant sales manager of the company has been promoted to the position of sales manager, according to a recent announcement by Linus O. Smith, president.



R. T.
FitzSimons

In his new post, he will be responsible for directing and correlating the sales and merchandising programs of the company's branch sales offices. He will remain at the head of Washburn's patented "Gellied Paint" promotions.

Since 1952, FitzSimons has assisted in the supervision of sales and service activities in both the paint grinding and floor maintenance lines. He is particularly well-known in the southwestern states where he was the company's southwestern division manager.

A veteran of 10 years experience on the research, sales and merchandising sides of the paint business, he joined the organization as a lab technician in the research laboratories of the company's Chicago plant. A native of Illinois, he attended the University of Arizona.

CELANESE

Several organizational changes in the market development and sales departments of the Plastic Division have been announced.

Dr. W. P. Moeller has been named manager, Market Development Dept., replacing Dr. W. E. Holland, resigned. Dr. Moeller, who has been with the company since 1938, was assistant manager of the department. J. W. Flynn, previously director of sales, sheet and molding compounds, moves into the post of assistant manager of the Market Development Dept.

W. G. West, who has been associated with Curtiss-Wright Corp. and Spencer-Kellogg & Sons, Inc., and H. S. Malby, formerly with Crane Engineering Corp. and Horace Blackham Co., have joined the Market Development Dept.

R. M. Leiter, formerly assistant director of sales of the sheet and molding compounds department, has been elevated to the position vacated by Mr. Flynn.

D. R. Mahan has joined the Sales Dept. with headquarters in the New England District office at Leominster, Mass. He has been assigned a sales territory in central and western Massachusetts. He formerly was with Atlantic Plastics, Diemolding Corp., Tech-Art Plastics and F. J. Kirk Co.

To WOOD or METAL lacquers **Zinflex** adds these important qualities



- lighter, clearer, deeper finish
- better adhesion, elasticity, mar resistance
- high oil and naphtha resistance
- high solids content at working body
- no checking or "alligatoring"



- greater adhesion to brass aluminum, tin plate and steel
- better build
- improved flexibility
- greater hardness
- PLUS all the benefits Zinflex gives to wood lacquers

Zinflex the modified shellac lacquer additive, makes your fine lacquers better because—

1. It's modified for greater compatibility with hydrocarbon solvents
2. You can use more of it in your lacquer formulations.

Write today for technical data, suggested formulations, and a generous test sample. Zinflex is a product of William Zinsser & Co., producers of only the finest shellacs since 1849.

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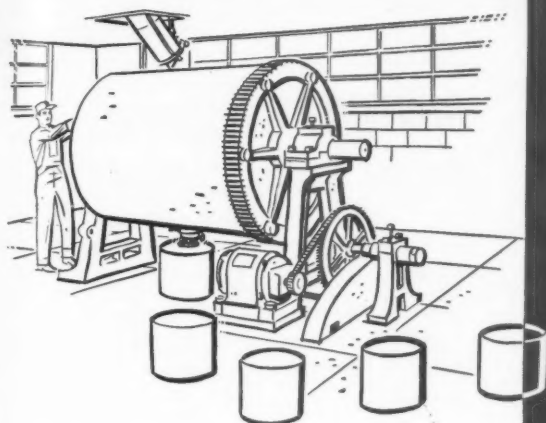
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DRIERS

Comply with the Strict
Tolerances Needed for
Highest Quality



Harshaw's precise manufacturing specifications demand the following tests for every batch of driers produced:

- Metal content**
- Specific gravity**
- Color**
- Viscosity**
- Total solids content**
- Flash point (TCC)**
- Moisture content**
- Acid value**
- Miscibility**
 - with raw linseed oil
- Miscibility**
 - with mineral spirits
- Benzene insoluble content**
- Customer's specified tests**

Order your next requirement of driers from Harshaw. They are produced and tested at our plant in Gloucester City, N. J. where we have the most modern facilities available. Harshaw Driers are distributed nation-wide through 18 stock points.

TYPICAL HARSHAW DRIERS

LIQUID DRIERS

- Uversol (Naphthenate) Liquids
- Linoresinate Liquids
- Linoleate Liquids
- Lithos
- Octasols
- Pastes
- Pastalls

SOLID DRIERS

- Uversol (Naphthenate) Solids
- Linoresinate Solids
- Linoleate Solids
- Soyate Solids
- Fused Resinates

POWDERED DRIERS

- Precipitated Resinates
- Drying Salts:
 - Cobalt
 - Lead
 - Manganese
 - Zinc

THE HARSHAW CHEMICAL CO.

1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

BENTONE* GELLING AGENTS IN MODERN PAINT FORMULATIONS

... One of a series of condensations
from laboratory reports detailing uses of BENTONES 18-C and 34

New Bentone...18-C... Gels Many High Polarity Organic Liquids

Dutch Boy Bentone 18-C is a new gelling agent for organic liquids of high polarity. It has proved useful in gelling solvent systems of the type used in cellulosic lacquers, vinyl solutions and dispersions, paint and varnish removers, epoxy resin coatings, adhesives and industrial paints.

A unique expanded gel-lattice structure is obtained when *Dutch Boy Bentone 18-C* is used in such solvent systems. It gives them stable and predictable thixotropic bodying action, excellent pigment suspension and controllable penetration characteristics. The configuration also provides reinforcing characteristics which contribute to the dry strength of resinous protective coatings and it improves the moisture resistance of the dried film.

DUTCH BOY BENTONE 34 Improves Exterior Primers

Exterior primers gelled with *Dutch Boy Bentone 34* show higher apparent viscosity levels. Pigment suspension and brushability are good. The film formed is strong, continuous, and an excellent top coat base.

BENTONE 34 Insures Better Color Control

In formulating top coats or sash and trim paints, better color control is obtained by using *Dutch Boy Bentone 34*. It prevents undue penetration and flooding. It also provides a controllable increase in viscosity, eliminates sagging, and improves brushability.

In top coat formulations *Bentone 34* acts to reinforce the film without impairing other desirable characteristics. In sash and trim paints, it helps develop uniform gloss characteristics.

Now Ready... New BENTONE 18-C Brochure

Information on the special properties and applications of *Dutch Boy Bentone 18-C* is given in a new brochure. A free copy will be sent promptly, if you write. And ask for the *Dutch Boy Bentone 34 Handbook* if you have not yet received your copy.

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SHELL LAB

(From page 36)

used to measure solvent power, are obtained by Cannon-Fenske Viscometers which give rapid and precise results. Excess Tolerance tests indicate the amount of additional low cost diluent a thinner will tolerate and thus provide a second approach to the measurement of solvency; film thickness measured by a General Electric thickness gauge; drying time (set-to-touch and dry hard); print resistance; cold-check; glass evaluations by Gardner Reflectometer, and many other tests may be used in solving a customer's problem.

High on the list of features at the laboratory are the exposure test racks for measuring the weatherability of automotive lacquers (inspections are made each month).

In addition, evaluation of hot lacquers and vinyl type lacquer coatings are also carried out.

Tying all this research together is a unique system for cataloging all the laboratory data by a punch card system. Someone around the laboratory whispered that all you have to do is punch out your problem on the mechanical wizard and all available data on the subject is dumped into your lap.

Over 200 Companies to Exhibit At Materials Handling Show

The 1955 National Materials Handling Exposition is expected to attract more than 200 companies whose displays will cover an area of 115,000 square feet of booth space.

This will represent a 15 per cent increase over the indoor exhibit space used in 1951 when the industry last held its exposition in Chicago.

The show will be held during the week of May 16 to 20 in the new exposition hall recently completed as an addition to the International Amphitheatre in Chicago.

In addition to the show, Clapp & Poliak, New York, producers of the event, will revive the custom of staging a Materials Handling Conference concurrently with the exposition to permit visitors to supplement their inspection of machinery with discussions of case histories of materials handling installations in the nation's leading factories and warehouses.

The theme for the show and conference is "The Concept of Obsolescence," selected because it emphasizes

the rapid out-moding of handling equipment.

A new aspect of the show will be the emphasis on new systems for handling rather than on particular single types of equipment which characterized previous expositions, according to Saul Poliak, president of the exposition firm. Although fork lift trucks and their accessories will play an important part, other types of equipment will be represented to a far greater degree than formerly.

Conveyors, both portable and permanent, hoists, monorails, cranes, tractors, trailers, hand trucks, portable and permanent elevators, stacking units, railroad car loading equipment, etc., will be demonstrated under simulated factory conditions.

Expanded Coating Resins Sales Forecast By Barrett Div. in 1955

Expanded coating resins sales for 1955, along with an overall expanded industrial consumption of "Plaskon" plastics and resin products, is forecast by Carleton Ellis, Jr., director of plastics and resin sales, Barrett Div., Allied Chemical & Dye Corp.

Coating resins are expected to continue to share in and grow with the building boom, Mr. Ellis said. He further stated that a number of new products to help provide better pigment-wetting, color retention and resistance to alkalis and detergents, are under development by Allied Chemical and will soon be brought to the commercial stage.

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PRODUCTION CLUBS

(From page 40)

Mr. Koohn, asked to talk about the forthcoming joint meeting of the St. Louis Paint and Varnish Production Club with the Kansas City Paint and Varnish Production Club to be held in Kansas City, introduced Mr. Vasterling who pointed out that the date being carried by one of the trade journals for this meeting is in error. It has been listed as Mar. 16, 1955 when it should be Mar. 12, 1955. The secretary promised to write to the journal making the necessary correction in the date. Mr. Vasterling said that

Sid Werthan of the New Jersey Zinc Co. would be the principal speaker at the Mar. meeting. The subject of Mr. Werthan's talk will be the position of the paint chemist today with regard to the confusing raw material situation. He will discuss what is expected of the paint chemist and the chemist's analysis of his problems. The talk will further cover modern trends in the formulation of trade sales products. Included will be the discussion of the tests that are made, how are these tests made and why they are made. A resume of Mr. Werthan's talk will be written so that the panel members, who will be Clovis Adams, Doc Londergan and a member whose acceptance has not been obtained as yet, will be familiar with the subject matter.

Considerable discussion ensued after

the introduction of a suggested topic by Mr. Wormser. The problem concerned the invitation and transportation to the joint meeting in Kansas City of the students of the paint course at the Rolla School of Mines and Metallurgy at Rolla, Mo. The question of how to invite these students and the amount of financial responsibility to undertake was discussed at length. It was thought by some that this was a matter to refer to the education committee. Another suggestion was that the cost of assuming the expense of these students on their visit to the Joint Meeting in Kansas City in March should be added to the overall cost of the affair.

During the discussion, it was pointed out that Dr. Schrenk will be a speaker at the Jan. 25 meeting of the Paint, Varnish and Lacquer Association meeting at the Phillips Hotel in Kansas City and that all production men were invited.

The club voted in favor of accepting the financial responsibility of inviting the Rolla students to the joint meeting at Kansas City. President Wormser appointed a committee to work with the St. Louis Paint and Varnish Production Club to determine the extent of the financial responsibility. This committee consists of Bill Thies, Chairman, Mr. Van Deutekon and Mr. T. Thompson. It will report at the February meeting.

Mr. Kicker reported that on Feb. 11 and 12 the directors and the finance committee of the Federation of Paint and Varnish Production Clubs will meet in Kansas City. They have requested that they be able to meet with the club. This will necessitate a change in the meeting from Feb. 10 to 11.

At the meeting a representative from the DuPont Co. will speak on "Colored House Paints."

President Wormser then introduced O. L. Nikles, technical service representative of the Shell Chemical Corp., who presented a paper entitled "Surface Coatings Derived From Epox Resins."

Tung Nut Crop Falls to One-Third '53 Yield; 16 Percent Below Average

Five producing states, Alabama, Florida, Georgia, Mississippi and Louisiana, estimated their total tung nut crop to total 40,200 tons of air-dried nuts in the husk, a two-third drop from 1953 and a 16 percent drop below average. These figures were made known in the annual crop summary issue by the Crop Reporting Board, Dept. of Agriculture. Freezes early in the year and drought later in the season were blamed for the small crop.

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CALENDAR OF EVENTS



Feb. 24-25. 9th Divisional Conference of the Protective Coatings Div. of the Chemical Institute of Canada. Feb. 24 — Royal York Hotel, Toronto; Feb. 25 — Ritz Carlton Hotel, Montreal.

Mar. 2-5. Southern Paint and Varnish Production Club Annual Convention, Hotel Biltmore, Atlanta, Ga.

Mar. 12. Joint Meeting of the Kansas City—St. Louis Paint and Varnish Production Clubs, Kansas City.

April 4-7. Spring Meeting of Div. of Paint, Plastics and Printing Ink Chemistry, ACS, Cincinnati, Ohio.

April 17-20. 46th Annual Meeting of American Oil Chemists' Society, New Orleans, La.

Production Club Meetings

Baltimore, 2nd Friday, Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.

Cincinnati — Oct., Dec., Mar., May, Hotel Alms.

Dayton — Nov., Feb., April, Suttmillers.

Indianapolis — Sept., Claypoll Hotel.

Columbus — Jan., June, Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 2nd Thursday, No Fixed Place.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, Last Monday, E. Jardin Restaurant, San Francisco.

Houston, 2nd Tuesday, Seven Seas Restaurant.

Kansas City, 2nd Wednesday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, Puritan Hotel, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, Annual Meetings Only.

Philadelphia, 3rd Wednesday, Engineer's Club.

Pittsburgh, 1st Monday, Fort Pitt Hotel.

St. Louis, 3rd Tuesday, Forest Park Hotel.

Southern, Annual Meetings Only.

Toronto, 3rd Monday, Diana Sweets, Ltd.

Western New York, 1st Monday 49-8 Club, Buffalo.

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NEWS

Fischer & Porter Forms German Affiliate for Sales, Manufacture

A German affiliate, Sartorius-Fischer, of Gottingen, has been recently organized by Fischer & Porter Company of Hatboro, Pa. for manufacture and sales of industrial process control instrumentation and chlorinators. Formed with Sartorius-Werke, producers of analytical balances, the new affiliate will manufacture under Fischer & Porter patents and designs. The company has affiliate plants already producing in England, France, and Holland.

P. J. McMullen of Sherwin-Williams Retires; Son Ed Takes Over Post

Paul J. McMullen, technical representative servicing the printing ink and graphic arts manufacturing industries, has retired after 33 years with the Pigment, Color and Chemical Div. of The Sherwin-Williams Co.

His territory was taken over by his only son, Edward J., who, until recently, was associated with the Chemical Sales Department of the Barrett Division of Allied Chemical and Dye Corp.

Edward is a graduate of St. Peter's College, is married, and the proud father of five children. During World War II he spent three years in the U. S. Navy.

"We feel particularly fortunate in having Ed McMullen follow in his father's footsteps," said B. M. Van Cleve, Vice President and Director of

PC&C Operations, "since we are certain that with his background of successful selling with Barrett, plus the guidance and advice of his father, he will be a real asset to our sales organization. To the best of our knowledge this is the first time that a sales territory of such importance has been handed on from father to son."

George Benda, Inc. Celebrates 131st Anniversary; 53rd Year in U. S.

George Benda, Inc., manufacturer of "Bendalin" custom quality bronze powders, this year celebrates its 131st year of continued operation and its 53rd year in this country.

In addition to its special bronze powders for paint and gold leaf makers, textile printers, lithographers roll leaf manufacturers, the plastics industry, and many of the decorative and fancy wall-paper and paper coating and finishing companies, the company, serves boat paint manufacturers (with special powders for copper anti-fouling paints), and the carbon brush industry.

Founded in 1824 at Nuremberg, Germany, the company was moved to Boonton, N. J. in 1902 where it has since remained. Control of the company was acquired by T. J. Hillery Sr. in 1919. President of the company is Mrs. R. A. Hillery. Management of the Benda operations is by New Jersey States Senator, T. J. Hillery, Jr., vice president and treasurer, and J. A. Cooney, secretary and plant manager.

Modern Laboratories Opened In Springdale by Pittsburgh Plate Glass

A completely modern structure that will house the basic research laboratories of the Pittsburgh Plate Glass Company's Paint and Brush Div. was recently opened in Springdale, Pa.

The main research building and pilot plant is a three-story concrete structure. The laboratory, completely air conditioned, contains approximately 68,000 feet of floor space.

The company's paint and plastics research operations were formerly located in Milwaukee.

N. Y. Woodfinishers' Supply Co. Starts Expansion Program

The New York Woodfinishers' Supply Co., Inc., Brooklyn, N. Y., has started a program of expansion by installing fifteen additional large underground tanks for handling of solvents.

The newest and most modern pumping and metering systems, together with new manufacturing facilities, will aid in the program of increasing production of lacquers, sealers, baking enamels, stains, etc.

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NEWS

Kinetic Dispersion Corp. Appoints 3 Agents for Sale of Kady Mills

Kinetic Dispersion Corp. has announced the appointment of three new agents to represent the company in the sale of Kady Mills.

They are Philip E. Calo Co., Inc., Chicago 1, Ill., to serve Northern Illinois; Rice & Co., Cleveland 15, Ohio, to serve Northern Ohio and Western Pennsylvania; and W. J. Grant Co., Philadelphia, Pa., to serve Southern New Jersey, Southeastern Pennsylvania, Delaware, Maryland, and Northern Virginia.

Discuss Sales and Production Plans At Two-Day Glidden Conference

Sales and production plans were outlined at a management conference at the Glidden Company's headquarters in Cleveland, Dec. 27 and 28. Management and sales personnel of the Chemicals-Pigments-Metals Div. took part in the discussion.

Principal speaker was J. P. Ruth, Company vice president and general manager of the division. Other speakers were G. M. Halsey, director of manufacturing for the division and Dr. B. W. Allan, technical director.

Sales plans were presented by Ralph B. Quelos, eastern sales manager of the Chemicals-Pigments-Metals Div., and James C. Rankin, central sales manager. Also present were managers of the division's plants at Baltimore, Collinsville, Ill., and Hammond, Ind.

Winfield Mayer VP of 50 Year Club; Has Been In Industry for 68 Years

Winfield Mayer, 84-year-old paint salesman for the Arthur G. Mangels Industries, was elected vice president of the 50 Year Club of the National Paint, Varnish & Lacquer Association at their annual convention in Chicago.



Winfield Mayer

He has been associated with the paint industry for 68 years—since he started his career as a young man of 17 with the Samuel H. French Co. of Philadelphia back in 1886. The company was reorganized in 1943 and became a subsidiary of Arthur Mangels Industries.

Membership in the club is composed of men who have worked in the paint industry for 50 years or longer. Mr. Mayer is still an active paint salesman, servicing a local territory.

Prof. Farrington Daniels Awarded Willard Gibbs Medal by ACS

Professor Farrington Daniels of the University of Wisconsin, internationally known authority on both atomic and solar energy, has been chosen to receive the 1955 Willard Gibbs Medal of the American Chemical Society's Chicago Section, according to Dr. Herman Bloch, section chairman.

Professor Daniels, a past president of the American Chemical Society, is chairman of the University of Wisconsin chemistry department.

The Willard Gibbs Medal, one of the highest honors in American chemistry, is awarded annually to an outstanding chemist selected by a national jury. Professor Daniels achieved wide recognition through his World War II work as director of the Metallurgical Laboratory at the University of Chicago, where the early research on atomic energy was conducted.

Baltimore Paint and Color Works Purchases Murphy Paint Company

The Baltimore Paint and Color Works has acquired the Murphy Paint Trade Sales Division of The Interchemical Corp., according to an announcement from Albert A. Shuger, senior partner of the Baltimore firm.

Milton W. Lightcap has been appointed president, and Henry Ritz vice-president-in-charge-of-sales of the new firm, to be known as The Murphy Paint Corp. It will be operated as an autonomous unit with warehousing, laboratory, and production facilities, and a sales and technical staff.



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P-59

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NEWS



Charles Kew, president of Kinetic Dispersion Co. of Buffalo, starts extended business trip to England, Germany, France and the Scandinavian countries where he will oversee the installation of his company's paint processing equipment.

Form Council to Stress Packaging Role of Collapsible Container

All sixteen of the nation's producers have joined in the formation of the Collapsible Tube Manufacturers Council in order to better promote the packaging role of the collapsible metal containers they make.

Mark W. Dresden, president of A. H. Wirz Inc., was elected chairman of the group.

Members of the council are: Aluminum Company of America, Edgewater, N. J.; Art Tube Co., Irvington, N. J.; Atlantic Manufacturing Co., Newark, N. J.; Atlas Collapsible Tube Co., Chicago; Globe Collapsible Tube Corp., Long Island City, N. Y.; Michigan Collapsible Tube Co., East Detroit, Mich.; National Collapsible Tube Co., Providence, R. I.; Peerless Tube Co., Bloomfield, N. J.

Also, Sheffield Tube Corp., New London, Conn.; Standard Collapsible Tube Co., Rochester, Pa.; Sun Tube Corp., Hillside and Washington, N. J.; J. S. Turner White Metal Co., New Brunswick, N. J.; Victor Metal Products Co., Newport, Ark., and Chico, Calif.; Wheeling Stamping Co., Wheeling, W. Va.; White Metal Manufacturing Co., Hoboken, N. J., and Indianapolis, Ind., and A. H. Wirz Inc., Chester, Pa.

Named to serve with Dresden, are Frederic Remington of Peerless, C.

Christy Jones of Alcoa, Charles Stiassni of White Metal, Victor Muscat of Victor Products, J. H. Heideger of Standard Collapsible, Kenneth M. Leghorn of Sun, and A. W. Paull Jr. of Wheeling Stamping.

Major Interest In Index Chemical Company Acquired By Pennsalt

The Pennsylvania Salt Manufacturing Company has acquired a major interest in the Index Chemical Company of Houston, Texas, Pennsalt President George B. Beitzel has announced.

According to the present plans, index activities will be integrated with the production and sales departments of Sharples Chemicals Inc., a Pennsalt subsidiary and pioneer producer of related synthetic organic sulfur compounds, for greater production and distribution.

Pittsburgh Plate Glass V. P. Takes on Lighter Work Load

Richard B. Tucker, executive vice-president of Pittsburgh Plate Glass Company since 1947, has relinquished that position and reduced his work schedule to a half-time basis. He retains the title of vice-president and continues general supervision of glass research, foreign operations and the export department, according to an announcement by Harry B. Higgins, president.

A director of Pittsburgh Plate Glass Company since 1942 and a member of the firm's executive committee, Mr. Tucker will continue to serve in those capacities. His broad responsibilities in the glass manufacturing division will be assigned to David G. Hill, vice-president.



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abstracts



Relationship Between Supply, Price and Use of Fats and Oils

Presented by S. O. Sorenson, Archer-Daniels-Midland Co. at the Drying Oil Symposium, 28th Fall (Paul Bunyan) meeting, American Oil Chemists' Society, October 11-13, Minneapolis, Minn.

Edible and industrial applications of fats and oils overlap and are partially dependent upon one another. Factors tending to decrease our edible oil supplies or limiting the availability of soap making stocks affect the broad

picture of drying oil use. This has become increasingly important now that the application of drying oils is no longer essentially the application of linseed oil.

Factors leading to commercial use of oils for protective coatings are dis-

cussed. Major points include (1) a readily available, stable, harvestable crop which (2) can be practically and inexpensively processed to give, in addition to the oil, (3) readily soluble by-products. Such "crops" as soybean, flax and menhaden meet these requirements. Ability to dry well is of secondary importance since present day chemical modification can convert a semidrying oil such as soybean oil into our second most important drying oil.

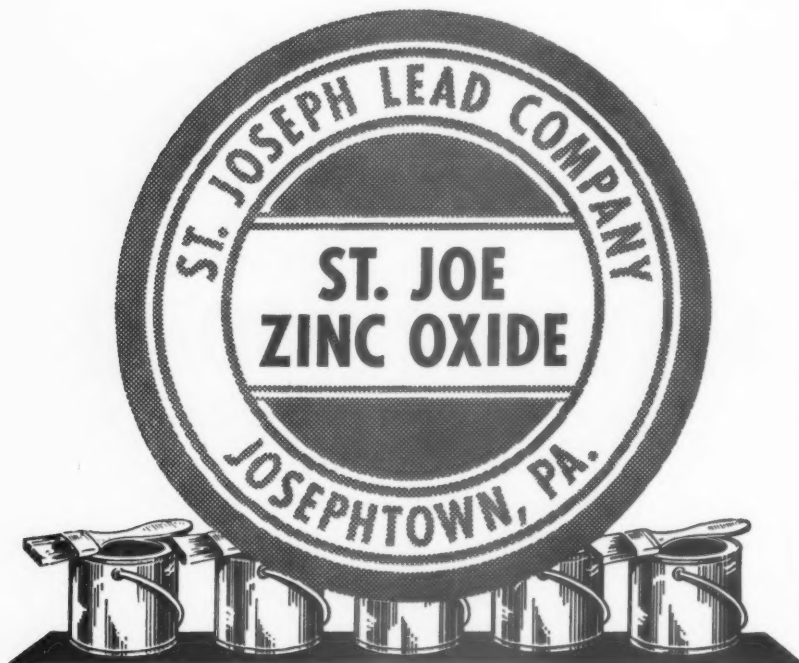
Price is not a primary factor of itself, being determined by the items above—ready availability, easy extractibility and economically valuable by-products. In addition, demand is a major influence in determining price and availability of oils for use in the paint industry; demand not only from the drying oil users but also from processors of edible oils and manufacturers of soaps.

Consumption figures for oils used in protective coatings in the United States during the past twenty years have doubled. Trends in oil use are discussed and educated guesses are made regarding future use of drying oils.

Finishes for Aluminum In Ship Construction

By G. Reiprich; Ind. Vernice (Italy), vol. 6, pp. 223-225.

As aluminum is not used in ship construction in direct contact with steel, finishes must be used with due regard to a uniform effect. For the painting of aluminum and the light metals in ship construction to achieve suitable durability, a satisfactory primer treatment is absolutely essential. The primer finish must be free from lead (red lead, white lead, chrome yellow), mercury and copper. A further requirement is good adhesion without pretreatment (roughening, chemical or anodic oxidation of the aluminum), effective corrosion protection, good stability to tropical conditions and resistance to aging. The primer finish must be capable of being coated with the usual cover-coat finishes which are used for steel and wood. The primer finish should be capable of being applied by brush or spray application, and with air drying should be capable of receiving a cover coat after at the latest 24 hours and, with stove drying, should require a maximum temperature of 100° C. The modern trend to improve the adhesion on precleaned surfaces is to use reaction primers. The cleaning and degreasing of the aluminum is conducted preferably in several stages. In the two-stage process for workshop or ship application, precleaning is conducted with petrol, benzene, toluol or with methylene chloride and, the final cleaning, with



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ST. JOE lead-free ZINC OXIDES—because of their **UNIFORM HIGH QUALITY**—have found increasing acceptance by manufacturers of protective coatings as primary ingredients in their products.

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clean solvents and dry-rubbing with clean rags. The three-stage process is conducted with alkaline cleaners and is only suitable for workshop.

Soda solutions are unsuitable for cleaning the aluminum; perchlorethylene cleans excellently but the fumes are narcotic in closed rooms. Trichlorethylene can only be used with cleaning machines. The chemical pretreatment methods are favorable for the adhesion of finishes but cannot be used on board ship. The cleaned and dried parts should be immediately treated with the primer finish. Edges and corners should preferably be pre-painted in order to obtain a sealing coating.

After the primer coating has dried, the first and second cover coat finishes should be applied as soon as possible to stop the primed surfaces from becoming soiled. Damp or oiled priming must be cleaned again and dried. For the cover-coat finishes, pure or combination resin finishes, linseed oil-wood oil standoil finishes or similar tested finishes can be used. From experience it has been found that a first cover-coat finish with an aluminum paint gives a good moisture-resistant and sealed coating. Iron parts which have been primed with red lead, after satisfactory insulation against adjoining primed light metal, can be jointly covered with this, with a common cover coat finish. Inaccessible constructional parts (corners, edges, angles, recesses, etc.) should be carefully coated as they will be difficult to inspect and will be exposed to condensed moisture, sea water, weathering and the action of dirt.

Internal parts, while being exposed the actions of weather (s) after total priming, should be treated with a phenol-free fambirc which is brushed or poured on. Aluminum surfaces which are needed to be net bright can be protected by non-yellowing zapone finishes, preferably with a two-stage coating, suitably cleaned after periods of 3-6 months with an alkaline-free cleaning agent. The cleaning of old finish coatings is conducted with petrol or alkaline cleaners; a good rinsing with water is necessary with the latter. For underwater finishes, anti-fouling finishes containing copper and mercury should not be applied directly on to the metal. Insulating primer and intermediate coatings are necessary, but even then attack of the light metal will occur if these are damaged. When refinishing, the old finishes should not be removed by burning off or by the pick hammer. Pitted finish residues are best removed with a triangular scraper, emery paper, or rust-free wire brushes. The new finish is then applied.

Polyvinyl Esters by Ester Interchange

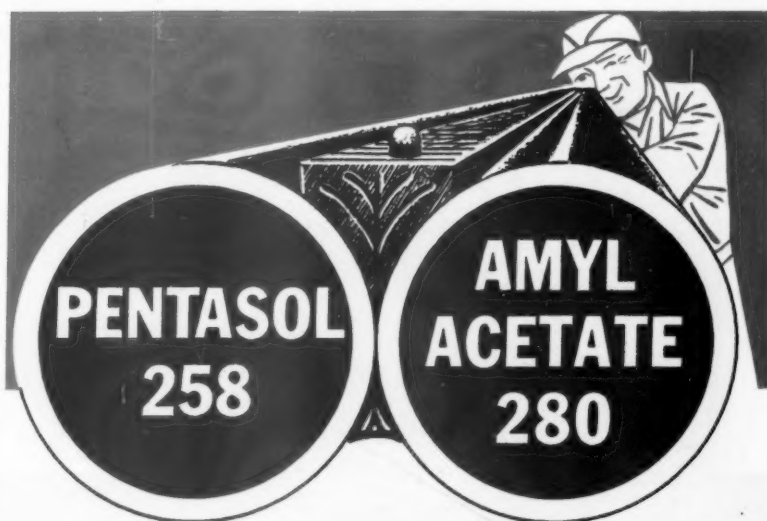
Presented by E. W. Eckey, R. O. Alderson, and R. J. Woestman, at the Drying Oil Symposium, 28th Fall (Paul Bunyan) meeting, American Oil Chemists' Society, October 11-13, Minneapolis, Minn.

Polyvinyl esters of the higher saturated fatty acids can be made by polymerization of the monomeric vinyl esters, by esterification of polyvinyl alcohol with fatty acid in the presence of a mutual solvent, and by ester interchange between polyvinyl acetate and fats or other esters of the higher fatty acids. The first method is not applicable when drying products comprising unsaturated fatty acid radicals are to be made. The ester interchange method provides a more direct route than

the esterification method, but requires special conditions for successful operation.


Under suitable conditions, polyvinyl acetate reacts with selected esters of higher fatty acids to produce mixed esters in which any desired proportion of the acetate can be replaced by the higher fatty acid radicals. Preferred conditions include the use of a mutual solvent at the beginning of the reaction, a temperature in the range between 50 and 100°C., with an alkali metal alkoxide or an organo alkali compound as catalyst. The reaction may be carried out with or without simultaneous removal of by-product esters by distillation.

The products are viscous oils, soluble in mineral spirits and in other fat solvents. Compared with triglycerides



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of the same mixed fatty acids, the polyvinyl esters dry more rapidly and form tougher, more scuff resistant and more durable films.

The polyvinyl esters of mixed higher fatty acids may contain a substantial proportion of saturated fatty acid radicals without graining or clouding. The properties of these esters suggest that they may extend the range of fatty materials useful in the drying oil industries and find use in the formulation of products of improved quality.

Modern Anti-Fouling Ships Bottom Paints

Peintures, Pigments-Vernis, vol. 29, No. 10, pp. 825-827.

While the usual anti-fouling paints contains copper and mercury oxides as the organic growth to prevent poisoning

agencies, the organic poisoning agents have so far proved to be less effective, and in recent times anti-fouling paints have been developed on the basis of the vinyl resins which are free from inorganic metal salts. A ship treated with this finish, after service cruising for a year, showed no trace of growth. An anti-fouling finish of this type (Dianol) is absolutely non-toxic to warm blooded animals while it acts as nerve-toxic to cold-blooded organisms.

Products based on polyvinyl butyral serve as passivating primer finishes (reaction primers) while anti-fouling and rust-protective finishes on the basis of polyvinylchloride acetate-mixed polymers have been produced. The reaction primers form an excellent primer ground for an anti-fouling finish.

Effect of Finish in Preventing Penetration of Moisture

Presented by R. S. Dantuma. Summerrization of paper read at the April meeting of the Koerperfarben und Anstrichstoffe (Paint Section) of the German Chemical Society.

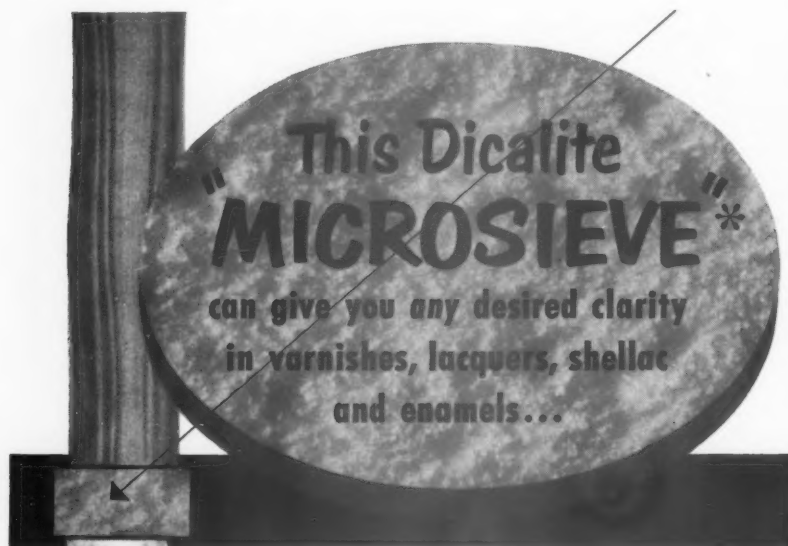
The author first indicated the difficulties arising when scientific research results are translated into practice, and, conversely, the problem of deducing theoretical fundamentals for practical discoveries. Details were then given of the behavior of wooden test pieces used in research against the various conditions imposed. These test pieces, coated with various finishes, after a definite drying time, were exposed to atmospheres of varying moisture contents.

The research conducted had served to show that the permeability values of the film, as normally obtained in the laboratory on the individual finish films, provide no direct criterion for the amount of moisture which the correspondingly coated test piece will finally absorb. With longer testing duration period, the results became all the more controversial. It is necessary however, that the moisture absorption behavior should be tested in conjunction with the primer which is used in practice. The results obtained in this way give an approximate measurement of the amount of moisture which will be absorbed by the coated wood when exposed to weathering influences and render possible a critical comparison between the different individual finish systems.

Moisture-Absorption Swelling of Oils

Presented by R. J. R. Singer. Summerrization of paper read at the April meeting of the Koerperfarben und Anstrichstoffe (Paint Section) of the German Chemical Society.

After a historical-critical review of the literature on the subject, the author dealt with the varying moisture-absorption swelling behaviors of linseed oils from Scandinavian seeds (higher iodine number) and Argentine seeds (lower iodine number). The differences between cold and warm, pressed and extracted, crude oils were then dealt with, as was the influence of various refining processes on moisture absorption-swelling behaviors of the individual oils. The author then considered the opening-up upgrading processing of the linseed oil in the direction of producing property similarity to wood oil, thus the production of conjugated linseed oils and this processing produces an improvement in the moisture absorption-swelling characteristics of the film. In addition, the stand oil cooking process also considerably reduces the



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moisture absorption swelling tendency of the film. Finally, it has been found that isolene oils with a high content of linoleic acid and a little linolenic acid have shown lower moisture absorption-swelling values than those with a high linoleic acid content only.

Solubility of Cellulose-Acetate-Butyrate

Presented by H. Meckbach. Summerization of paper read at the April meeting of the Koerperfarben und Anstrichstoffe (Paint Section) of the German Chemical Society.

The author indicated the characteristics in solvent behavior of the cellulose-acetate-butyrate, particularly with a butyric acid content of 20 - 25 per cent. The influence of the hydroxyl content of the various acetate-butyrate on the solvent behavior has been scarcely investigated up to now. It should be mentioned that acetate-butyrate dissolves in the hot, lower alcohols by which more or less saturated solutions of high moleculars can be prepared. When such solutions are cooled, the separation of the acetate-butyrate in quasicrystalline form is observed, while otherwise high molecular bodies are accustomed to separate out from warm solutions more or less in the gel form. By the "releasing" from hot alcohols, there is provided a possibility of producing a pure and particularly rapid soluble acetate-butyrate.

Detailed also were the high "cutting" characteristics of acetate-butyrate solutions with aliphatic solvents, by which deviations from the normal viscosity behaviors are obtained.

Ethoxylene Resin-Based Finishes Hardened With Amines

Presented by J. J. Zonsveld. Summerization of paper read at the April meeting of the Koerperfarben und Anstrichstoffe (Paint Section) of the German Chemical Society.

The author indicated that finishes through-hardened with amines represent the newest development in the field of the ethoxylene finishes. Consideration was first given to the composition and formulation of these finishes for varying applications, and this was outlined in regard to solvents, additions to improve the flow and spread characteristics, pigments, as well as the type and amount of various amine hardening medii.

In addition, the amine adducts have recently been developed as hardening medii and these give considerable improvement with the cold-hardening finishes. The author dealt further with the stability of the finishes after admixture with the hardeners, the working characteristics, mechanical characteristics, finish stability towards chemi-

cals, stability towards water, weathering resistance, appearance, and concluded with data regarding the replacement possibilities of the Epicote finishes.

Evaluation of "Hysoy" in Exterior Paints

Presented by A. J. Lewis and H. M. Teeter, Northern Utilization Research Branch, Peoria, Illinois; and W. T. Walton and R. S. Haines, Paint Research Associates, Inc., Chicago, Illinois, at the Drying Oil Symposium, 28th Fall (Paul Bunyan) meeting, American Oil Chemists' Society, October 11-13, Minneapolis, Minn.

"Hysoy" is a synthetic drying oil obtained by dechlorination of chlorinated soybean oil. Six exterior white paints were prepared having the same pigmentation but differing in vehicle.

Vehicles were linseed oil, soybean oil, Hysoy, and blends of Hysoy and soybean oil. Red-cedar siding panels were given 3 coats of each paint and exposed for 4 years at a 90° angle, facing south, at Peoria, Illinois. Paints containing Hysoy compared favorably in durability with those containing linseed and soybean oils. Principal advantage of the Hysoy paints was a decrease in drying time.

Mechanical Characteristics Of Finish Films

Presented by H. W. Talen. Summerization of paper read at the April meeting of the Koerperfarben und Anstrichstoffe (Paint Section) of the German Chemical Society.

The protective action of a finish film is governed to a high degree by the

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mechanical characteristics of the film, i.e., by the mechanical characteristics with the formation of the film, but not less by the change of these characteristics during the active "life" of the film under the varying actions and conditions.

A practical example is the conduction of tensile tests on free films. For this, films of various typical finish types were selected and, after defined times, were subjected to the test which determined the tensile strength, the elongation and the rupturing elongation. The examples were concerned with red lead and iron oxide—linseed oil paints, to standoil and alkyd resin finishes with white pigments, by which the influence of the addition of hard resin was shown. The typical effects obtained by the addition of pigments and resins respec-

tively were clearly indicated in the tensile curves. In conclusion some facts were given regarding the characteristics after extraction of the film with organic solvents.

Measurement of the Thermal Conductivity of Finish Films

Presented by G. Fuchslocher. Summerrization of paper read at the April meeting of the Koerperfarben und Anstrichstoffe (Paint Section) of the German Chemical Society.

Starting from a consideration of the three possibilities of thermal exchange with materials: thermal conductivity, thermal convection and thermal radiation, the author dealt with the influence of the thermal conductivity of finishes. Special consideration was given to the application of finishes for special cases

such as the surface protection of surfaces which are to be heated or cooled. Details were given of a new experimental method which allows for determining the thermal conductivity of thin finish films down to 10 microns in thickness. Using this test method, a study was made of lacquer finishes of various compositions, the influence of the pigmentation of lacquer finishes, the relation of the thermal conductivity to the pigment concentration and the influence of the coating thickness of the finish film.

Silicones And Surface Protection

By W. Noll: Angewandte Chemie, Vol. 66, No. 2, pp. 41-55.

While with silicic acid esters the carbon is only combined with silicon over oxygen (R-O-Si), the silicones, as true silicon-organic compounds, evince direct carbon-silicon linkages (R-Si-O). By co-polymerization or the siloxane units the manifold possibilities of the commercial silicones can be developed in a planned manner. Mixed polymerization of monofunctionals with difunctional siloxane units leads to linear polymers (silicone oils). Co-polymerization of only the difunctional groups gives cyclic polymers and co-polymerization of di- and trifunctional units resin-like poly-siloxanes. Present day production methods makes use almost entirely of the organo-silanes as the starting and intermediate products respectively.

The following characteristics are decisive for the application of the silicones: Thermal stability, the low dependency of many physical constants on the temperature, hydrophobic behavior, incompatibility with most organic high polymers and physiological inertness.

As a medium for preventing the floating of pigments in lacquer finishes, the silicones are of influence on the horizontal but not on the vertical separation of the pigment particles; so they are only effective with dip and spray finishes, not with brushing finishes, since with these the lacquer film is not only moved in a horizontal but also in a vertical direction.

The silicone resins are marketed as solutions of methyl polysiloxane or methylphenyl polysiloxane condensation products, which are not yet completely condensed and only condense out completely after evaporation of the solvent medium and heating (stoving). As with all the other silicone products, the silicone resins show noteworthy permanent thermal stability between 180°C and 200°C. They also show a favorable dielectric behavior between 20°C. and 300°C. so that in conjunction with fillers they present



The same qualities that develop gloss on top of a film contribute to adhesion on the bottom. The reduction of pigment agglomerates, and thorough pigment wetting, give the binder its best chance to do its job.

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a valuable electrical insulation material. They are further suited for the production of thermal resistant finishes and coatings.

Besides the pure silicone resins, there are resins which consist of condensation products of silicones with organic resin formers as for example, silicone-alkyd resins and silicone polyester resins. These are more favorable from the price point of view and possess better technical finish properties. The thermal stability of the combination resins is lower than that of the pure silicone types. Through alkyd modification, etc. polysilicic acid esters can also be converted into resin-like products which are free from alkali, in differentiation from water glass.

Paint for Protection of Steel In Salty Atmospheres

By H. E. Bright: *Journ. Iron and Steel Inst.*, vol 175, No. 4, p. 449.

A report is given on tests on steel sheets, which after careful cleaning, were coated with paints and zinc and aluminum, and exposed to the attack of sea water. This quick test method was shown to be 10 times as effective as the corrosion taking place on the steel of the Australian Sydney Harbour bridge whose paint coatings have a service life of about 5 years. Cleaning

with a sand blast before painting is found to be an advantage. Red lead for this purpose is a better primer than zinc chromate. Tung oil—phenol finishes showed up more favorably than alkyd resins. Aluminium was the most favorable of the sprayed metals.

Temperature Indicating Finishes For Industrial Metal Surfaces

By R. Thews. *Metaloberflaeche*, vol. 5, pp. B. 139-140.

A survey is given of the metal compounds used for incorporation in temperature-indicating finishes: cobalt-chloride, mercury oxide, copper bromide solution, copper ferrocyanide, arsenic disulphide, mercury sulfide (red form), lead chromate, tin sulfide, copper iodide, mercury iodide-copper iodide and mercury iodide—silver iodide. Of these, for the critical temperature ranges which, for the most part, come into question with electrical apparatus, storage vessels etc., only the mercury, copper and silver iodides are used. The actual transformation temperatures of a temperature indicating finish depend primarily on the composition of the pigment but partly also on the manner in which the finish is prepared and also on the preparation of the pigment.

Finishes Research On Water Absorption

Presented by Prof. J. D'Ans. *Summerization of Paper read at the April meeting of the Koerperfarben und Anstrichstoffe (Paint Section) of the German Chemical Society.*

The author outlined the various possibilities for conducting applied research in the finish industries. The swelling absorption of finish films with moisture was then considered and also the gravimetric determination of the swelling absorption reaction. Research has been conducted on this phenomenon for a period of 30 years and data was presented covering the results obtained during this work.

Synthetic Resins For Finishes

By M. Burgin: *Chem. Rundschau*, vol. 6, pp. 391-393.

The author gives a survey of the synthetic resins which can be employed for the formulation of corrosion-protective finishes. These comprise the phenol-formaldehyde condensates, colophony-modified phenol resins and alkyd phenol resins, urea-formaldehyde resins; melamine aldehyde condensates, alkyd resins, malinate, ketone, acetaldehyde, ethoxylene, and sulfamide resins, polyurethane and other polymerization resins.

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VULCAN STEEL CELEBRATES 2nd ANNIVERSARY

The Vulcan Steel Container Co., Birmingham, Ala., which recently celebrated its second anniversary, is headed by a man who has been in the business for a quarter of a century.

Gordon D. Zuck, president and founder of Vulcan, has made quality such a routine and standard practice that the company has gained the confidence of leading paint, varnish and lacquer manufacturers everywhere. Throughout the plant large signs marked "Customers Remember Quality" stand as a constant reminder of an ultimate goal.

During the past year, the organization added over 30% floor area to increase production capacity, and claims to be the only plant in the South devoted exclusively to the manufacture of a full line of steel shipping containers from 1 to 8 gallon.

The company maintains sales offices in ten principal cities throughout the

South and has abundant warehouse stocks at these points. Vulcan sales representatives, experienced in the packaging field, are ready to aid customers in any of their container problems. By maintaining these warehouses, Vulcan helps several important industries to

many products must be protected from discoloration, corrosive reactions, and contamination, Vulcan-lined pails have been proven-in-use for such hard to hold products as latex, water emulsion, and PVA paints, chemicals, special inks, and food products. These Hi-Bake linings are applied with modern equipment to provide complete and uniform coverage.

"The establishment and operation of this modern pail plant here in the 'Heart of Dixie' has not only brought lower container costs to the fast growing industry of the South," says Mr. Zuck, "but because of faster service has made it possible for these plants to operate safely with much smaller inventories."

"The flexibility of our operation, our high daily production, and our central location close to a ready supply of

quality steel," Mr. Zuck said, "go to make up an organization that steel container users do not commonly find elsewhere. "Our plans call for continued growth and a high standard of quality."



Gordon D. Zuck, president, seated on left, confers with top staff. Right seated is Edwin Powell. Top, left to right, Werner Wengert, Don Spurrell and Ray Mitchell.


operate with minimum inventories and still have a dependable source of container supply.

Hi-bake lined pails and drums are a specialty with the company. Since



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BODIED OILS

(From page 38)

catalyst is entirely different from simple thermal bodying.

We have examined in the laboratory two bodied oils made from the same linseed oil and having practically the same viscosity. One was a normal heat-bodied oil, polymerized for 52 hours at 280°C and the other was

network, while at the lower temperature, transesterification reactions have not interfered. These two causes result in a bodying reaction similar to that of tung oil.

In summary, in this paper we have, primarily, attempted to call attention to the secondary phenomena which take place along with the classical reaction of pure polymerization. The same considerations are valid in explaining a number of other happenings.

Table I

	Monomeric Acids	Dimeric Acids	Trimeric and oxidized trimeric acids.
Heat-bodied oil	52.8%	31.5%	15.7%
Catalyzed Oil	67%	16.2%	16.7%

polymerized for 47 minutes at 110°C in the presence of 1.6% boron trifluoride.

A chromatographic analysis of the total ethyl esters of the acids of these oils produced the following results: shown in Table I.

From these figures it can be seen that the presence of boron trifluoride has led towards the formation of a greater amount of trimeric acids, and a more complex

Some of the phenomena occurring in the bodying of oils are considered inexplicable since the simple explanation has not yet occurred to anyone.

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Colton Chemical to Make Emulsions At New Elkton, Maryland Plant

Production of polyvinyl acetate emulsions is expected to begin early this year at the Elkton, Md. plant recently acquired by the Colton Chemical Co., Cleveland, Ohio. Colton is a division of Air Reduction Co.

The Elkton unit will also produce a new copolymer emulsion for use in polyvinyl acetate paints.

Form Permagile Corp. to Deal In New Type Resin Compounds

A new company, Permagile Corporation of America, New York, has been formed to manufacture and sell new type plastic resin compounds, according to an announcement by Dr. J. A. Neumann, president of American Agile Corp., Cleveland, Ohio, who will also head the new firm.

Other officers are Theodore I. Leston, vice president in charge of research, development and production for Eutectic Welding Alloys Corp., New York, who will serve as executive vice president; William B. Kriewall, former chief engineer of Eutectic, who will serve as vice president in charge of production and development; and G. Vajda, president of G. Vajda & Co., New York and Tokyo.

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TECHNICAL Bulletins

AEROSOL VALVES

A 4-page booklet published by the Valve Division of The Risdon Manufacturing Co. of Naugatuck, Conn. describes the company's new five-in-one, 5210 aerosol valve design.

The bulletin pictures and describes the five models which stem from one basic valve design. Cross-sectional drawings show the internal details of the basic valve as well as the five actuators which adapt the valve to different dispensing functions.

Of particular interest to the loader or manufacturer of several aerosol products is the inventory-simplifying versatility feature. It shows how the basic 5210 valve dispenses virtually the entire range of can-packed aerosols including 3-phase, ultra low pressure and foam materials, simply by applying the appropriate actuator. The

various actuators are illustrated as they appear mounted on the valve.

Protective overcaps in metal and plastic are also shown.

Protective overcaps in metal and plastic are also shown.

Copies are available on request from Donald Tuttle, Sales Manager, at the company's address.

FIRE RESISTANT CHEMICAL

A detailed informational booklet on the recently-introduced fire resistant chemical, "Borotherm", has been issued by American Potash & Chemical Corp.

The brochure includes all available information on the product which is used in such varied manufacturing industries as paint, cellulosic insulating board, building materials, paper, lumber and milling, textiles and fabrics and others.

Information is also given regarding the products ability to control thixotropic systems of clay. Information is also included on formulations as a result of research at the company.

Further information is available from American Potash & Chemical Corp., 3030 W. 6th St., Los Angeles 54, Calif.

REFERENCE STANDARDS

"Standard Samples and Reference Standards," Circular 552, has been issued by the National Bureau of Standards.

The 23-page circular contains a descriptive listing of the various Standard Samples issued by the National Bureau of Standards. A schedule of weights and fees, as well as direction for ordering, is included. Summarized tables of analyses are presented, to indicate the type of standards of composition presently available. The current status of the various standards will be indicated by a mimeographed insert.

The standard samples are materials that have been carefully analyzed, or whose physical properties have been precisely determined, at the Bureau and other laboratories.

The circular is 25¢ and can be ordered from the Government Printing Office, Washington 25, D. C.

PLASTIC PIPE AND FITTINGS

How to use and specify rigid plastic pipe and fittings is the subject of a 12-page catalog of its standard line offered to design, maintenance and application engineers, by Alpha Plastics, Inc., 14 Northfield Rd., West Orange, N. J.

Catalog provides useful reference facts on its 1/2" and 4" line of normal impact (Alpha #101) and high impact (Alpha #103) unplasticized polyvinyl chloride pipe and fittings, plus properties and characteristics data, together with detailed drawings and specifications of solvent-type fittings plus the new, injection-molded threaded fittings.

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ETHYL ACETATE

A 12-page booklet on ethyl acetate has recently been issued by Carbide and Carbon Chemicals Co., a Division of Union Carbide and Carbon Corp.

The booklet contains information on the uses of ethyl acetate and its physical and physiological properties, specifications, shipping data, and constant-boiling mixtures. It has been prepared for people in the chemical processing industry: chemists, engineers, purchasing agents, and laboratory workers.

Graphs on vapor pressures, specific gravities, freezing points, and other important physical properties are included, as well as comparative information on resin solubilities, general solvent properties, and viscosity of lacquer formulations.

Copies of the booklet, F-8140, are available from any of Carbide's 25 offices or Carbide and Carbon Chemicals Co., 30 East 42nd St., New York 17, N. Y.

ACETONE

Acetone is described in a new 12-page data folder just released by Carbide and Carbon Chemicals Co., a Division of Union Carbide and Carbon Corp.

Data are included on physical and physiological properties, specifications, constant-boiling mixtures, general solvent properties, and resin solubilities. In addition, information on its performance in nitrocellulose lacquers is given and other uses are described. The bulletin also contains six charts showing physical properties.

Copies of data folder, F-8650, are available on request from Carbide and Carbon Chemicals Co., 30 East 42nd St., New York 17, N. Y.

EQUIPMENT

A new catalog lists and illustrates the complete line of Buflovak equipment for pharmaceuticals, chemicals, processing food products and for by-product recovery.

Included for the first time are many new products such as the conveyor type dryer which dries solid materials containing solvents; the Individual Side Conveyor Drives for Double Drum Dryers; the Continuous Glue Dryer; and Double Motion Agitators with Swing-type

Scrapers for scraping heating and cooling surfaces.

Copies of the catalog, No. 363, can be obtained from Buflovak Equipment Division, Blaw-Knox Co., 1575 Fillmore Ave., Buffalo 11, N. Y.

PAINT EQUIPMENT

A newly revised equipment catalog for the paint and varnish industry is now being offered by the Brighton Copper Works Inc.

This hard-covered, 55-page book has illustrations and lengthy technical descriptions for almost every piece of equipment the company manufactures, including portable kettles and trucks; set kettles; thinning tanks; dissolving mixers; laboratory equipment; gas-fired,

oil-fired and Dowtherm-heated kettles, and many others.

For free copy write the Brighton Copper Works Inc., Dept. 8, 821 State Ave., Cincinnati 4, Ohio.

MALEIC ANHYDRIDE

A 19-page illustrated booklet deals with Maleic Anhydride. The booklet is illustrated with pictures, charts and graphs.

Covered are specifications; physical constants; approximate solubilities; packaging and handling; how Maleic Anhydride forms resin products; Maleic Anhydride in phthalic-type alkyd resins; upgrading oils with Maleic Anhydride; formation of hard resins with Maleic Anhydride; formation of tall oil resins with Maleic Anhy-

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Monsanto Chemical Co., Organic Chemicals Div., St. Louis, Mo.

STYRENE-BUTADIENE LATEX

An 8-page bulletin entitled, "Firestone Butaprene Paint Latexes for Styrene-Butadiene Latex Paints" has just been issued.

Included are sections on latex requirements; paint requirements; formulating a typical paint; formulating ingredients; paint preparation; mixing; precautions; a concluding statement; and a listing of the company's butaprene paint latexes which lists latex properties and film properties.

Chemical Sales Division, Firestone Plastics Co., Division of the Firestone Tire & Rubber Co., Pottstown, Pa.

GLYCERINE ALKYDS

A new booklet, "Glycerine Alkyds Tailored To Need" is now available. This 20-page reprint of articles by Charles R. Bragdon, engineer and consultant in the field of organic coatings, will be of practical value to users of alkyds as well as resin manufacturers. It assists in selecting the alkyd resin that best meets the specific needs of each coating requirement.

Examples of how to choose resins for imparting qualities of color retention, gloss, drying speed, flexibility, etc. are outlined,—as well as specific information on processing methods, choice of raw materials, and modifying constituents that influence performance criteria of the finished product. How costs of such resins are related to changes in composition and processing methods is discussed. And a comparison is made between glycerine alkyds and those made from various other polyols.

Present and future trends in the manufacture and use of glycerine, alkyds, and methods for their

evaluation are noted in the final section.

A copy of this booklet may be obtained without cost by writing to the Glycerine Producers' Association, at 295 Madison Ave., New York 17, N. Y.

VISCOSITY CHART

A chart which provides a quick, convenient means of translating any viscosity measurement into seven other standard units has just been released.

Methods of measuring viscosity vary from industry to industry and, even in the same field, from one company to another. This conversion nomograph has been designed to minimize the problems caused by the lack of standardization by providing a means of rapidly converting from one system to another.

The chart is available free of charge by writing to Dept. VC, Nopco Chemical Co., Harrison, N. J.

SHIPPING CONTAINERS

The Steel Package Division of Geuder, Paeschke & Frey Co., Milwaukee, is distributing a new catalog showing the variety of G. P. & F. steel shipping containers now available for petroleum, paint and chemical industries. The catalog illustrates all containers and gives specifications and carload quantities of each product. Also included are illustrations and descriptions of various types of spouts available for use with G. P. & F. pouring pails and tight-head drums.

The company is located at 324 N. 15 St., Milwaukee 1, Wis.

RACK FLASH TESTER

Publication of bulletin No. 720, on the "Automatic Loading Rack Flash Point Tester" has been announced by Precision Scientific Co. The instrument is licensed by Standard Oil Co. of Ind. (Patent Pending).

The 8-page, illustrated bulletin points up the safety and time-saving features of the apparatus when used as a means of checking distillate fuel at any bulk distributing or storage point.

The bulletin will be sent on request to those writing the company at 3737 W. Cortland St., Chicago 47, Ill.

National Distillers Products Corp. Purchases Land for Newark Plant

National Distillers Products Corp., 99 Park Ave., New York 16, N. Y., has announced the purchase of about 3½ acres comprising a portion of a 10-acre waterfront property in Newark, N. J.

Work is expected to start promptly on a new plant to be used by U. S. Industrial Chemicals Co. Division for warehousing and distribution of alcohols and other chemicals, according to Lee A. Keane, director of chemical sales for National.

The plant will have a capacity for handling over 10,000,000 gallons a year. Modern facilities will be installed for receiving bulk shipments by rail or water. Large storage tanks for 190° and 200° proof alcohol will permit prompt shipment of pure alcohol in all types of containers.

Denaturing equipment will be installed to make all formulas of denatured alcohol as well as U.S.I.'s proprietary solvent-Solox. Shipping facilities will permit distribution of alcohols and other chemicals in tank cars, tank trucks, drums and various smaller packages.

According to Mr. Keane, acquisition of the Newark plant site is part of National's chemical program to meet certain long-term objectives which include integration of all its chemical activities.

In addition to these new facilities, National Distillers has authorized the Girdler Corp. to install natural gas reforming equipment at its Tuscola, Ill. plant to expand its ammonia capacity to 60,000 tons per year by mid-1955. National's own Engineering Department is designing other new denaturing units for Tuscola, Ill. A new pilot plant building also is being constructed at Cincinnati, Ohio. This unit, together with the expansion of the laboratory building completed this Spring, will permit National to centralize its research at Cincinnati.

Tom Kee Heads Southeastern

Sales Area for Schenectady Resins

Schenectady Resins, Division of Schenectady Varnish Co., Inc. has created a new sales region covering the southeastern area of the United States.

Tom Kee, with headquarters in Atlanta, Ga. has been appointed technical representative in this territory. The complete Schenectady resin line will be offered this area, including phenolics, alkyds, terpenes, maleics and foundry shell mold and other specialty resins.

Kee, joins the company's sales organization after spending the last five years with Reichhold Chemicals.

New Books

Colloid Chemistry

Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 420 pages. Price \$8.00.

"A Short Textbook of Colloid Chemistry" by B. Jirgensons and M. E. Straumanis, is for text and reference use, by those interested in the branches of natural science which include medicine, pharmacy, and industrial applications.

The authors first provide a brief survey of fundamental terms, classifications, and elementary laboratory methods used for colloids. From here, they proceed to a more exhaustive study of the important classical and modern methods of light scattering, electrophoresis, ultracentrifugation, viscosity, electron microscopy, x-ray analysis, and related subjects.

The book emphasizes the dependence of various properties of colloidal systems on the sizes and shapes of the constituent colloidal particles and macromolecules, with both organic and inorganic colloids used as examples. Basic facts and relationships are stressed, particularly in connection with practical problems, rather than theoretical speculation.

Dr. Jirgensons is with the Anderson Hospital for Cancer Research at the University of Texas. Dr. Straumanis, a research professor of metallurgy, is at The University of Missouri School of Mines and Metallurgy, Rolla.

Organic Reactions

Volume 8 in the "Organic Reactions" series. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 437 pages. Price \$12.00.

In accordance with the established procedure of the series, the new volume goes exhaustively into a select set of reactions or a definite phase of a reaction, each examined from the preparative viewpoint, and with special attention given to limitations, interfering influences, effects of structure, and the selection of experimental techniques. The eight reactions that now join the growing group are studied by the authorities who work most closely with them and have been selected on the basis of their wide applicability and value to current research.

Contained in the volume are: "Catalytic Hydrogenation of Esters to Alcohols" by the late Homer Adkins; "The Synthesis of Ketones from Acid Halides and Organometallic Compounds of Magnesium, Zinc, and Cadmium" by David A. Shirley; "The Acylation of Ketones to Form Beta-Diketones or Beta-Keto Aldehydes" by Charles R. Hauser, Frederic W. Swamer, and Joe T. Adams; "The Sommelet Reaction" by S. J. Angyal; "The Synthesis of Aldehydes from Carboxylic Acids" by Erich Mosettig; "The Metalation Reaction with Organolithium Compounds" by Henry Gilman; "Beta-Lactones" by Harold E. Zaugg; and "The Reaction of Diazomethane and its Derivatives with Aldehydes and Ketones" by C. David Gutsche.



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How HYDRITE Kaolinites affect VISCOSITY in Butadiene-Styrene Copolymer Latex Paints

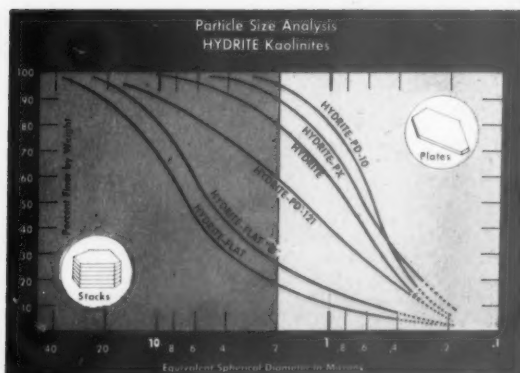
HYDRITE Kaolinites help to control viscosity in water-dispersed paint systems.

The curve at the right was obtained by using **HYDRITE** Kaolinites ranging in particle fineness from 4 to 100% finer than 2 microns in a typical butadiene-styrene latex formulation at 45% PVC. Curves at other PVC levels retain the same general shape but are displaced along the vertical axis depending on the amount and type of thickener used and the effective water demand of the kaolinite as influenced by the amount and type of dispersing agents used.

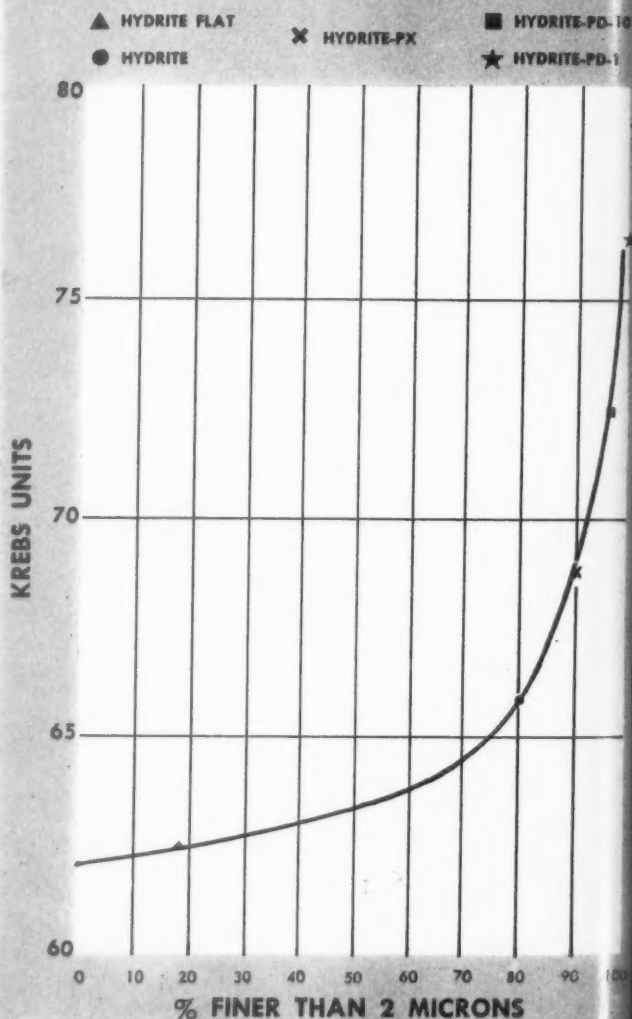
This curve shows why kaolinite may be used as an aid in controlling viscosity. The body imparted by kaolinite is thixotropic in nature, promotes good brushing and leveling characteristics, is not ropy as is that imparted by extenders containing reactive ions, and being of a mineral nature is stable and not subject to chemical or bacteriological degradation.

Further details are given in our Technical Service Bulletin TSBH-11.

Send for it.



VISCOSITY VS PARTICLE SIZE DISTRIBUTION



#4 in a series on the effect of **HYDRITE** Kaolinites on properties of butadiene-styrene latex paints.



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